



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

AUG 03 2018

OFFICE OF WATER

Ms. Penny Shamblin  
Counsel for Utility Water Act Group  
Hunton & Williams LLP  
Riverfront Plaza, East Tower  
51 East Byrd Street  
Richmond, Virginia 23219

Re: Petition for Reconsideration of the Environmental Protection Agency's (EPA) Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools submitted by the State of Washington on August 1, 2016, and Repeal of the Final Rule Revision of Certain Federal Water Quality Standards Applicable to Washington, 81 Fed. Reg. 85,417 (Nov. 28, 2016)

Dear Ms. Shamblin:

This letter concerns your petition dated February 21, 2017 to the U.S. Environmental Protection Agency requesting reconsideration of the EPA's partial disapproval of Washington's human health water quality criteria and implementation tools submitted by the State of Washington on August 1, 2016 and either repeal or withdrawal of the EPA's final rule titled "Revision of Certain Water Quality Standards Applicable to Washington," 81 FR 85417 (November 28, 2016).

After reviewing your petition, the Agency has decided to reconsider the EPA actions referenced in the petition. The Agency intends to move forward with its reconsideration as expeditiously as possible. At the conclusion of the Agency's reconsideration, we will provide a response to your petition setting forth our decisions whether to grant or deny the specific requests in the petition.

Should the EPA decide to conduct a rulemaking to amend any part of the federal rule, the EPA would provide an opportunity for notice and comment.

If you have any questions regarding the reconsideration process, please contact Sara Hisel-McCoy at (202) 566-1649.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Ross".

David P. Ross  
Assistant Administrator

## Appointment

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**From:** Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]  
**Sent:** 4/5/2017 10:52:33 PM  
**To:** Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]; Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]; mgil461@ECY.WA.GOV; Chung, Angela [Chung.Angela@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**CC:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]; cnie461@ecy.wa.gov; Finch, Bryson (ECY) [bfin461@ECY.WA.GOV]; Conklin, Becca (ECY) [bcon461@ECY.WA.GOV]; Snouwaert, Elaine (ECY) [ESNO461@ECY.WA.GOV]  
**Subject:** In person meeting with EPA and Ecology  
**Location:** Lacey Room 2B-18  
**Start:** 4/28/2017 7:00:00 PM  
**End:** 4/28/2017 9:00:00 PM  
**Show Time As:** Busy

### Room 2B-18

Time set aside to meet in person and discuss work going on in WA WQS. We are looking to leave Seattle at about 10:45, and hope to make it by 12:00. If traffic is not good we will update you on our journey. I look forward to meeting everyone!

### Work involving WQS in the state of Washington:

-Temperature work (Columbia River and others)

- What is happening with the temperature TMDL litigation?
- Any update on Oregon temperature criteria BiOp RPA – Identifying cold water refugia?
- NCC workgroup for R10

-PPA – Check in on the following agreed upon activities:

- Rec Criteria development
- DO / Sediment Criteria development
- Triennial review / 5 year plan

-Human Health Criteria implementation

-Spokane Mayor discussion

-Spokane taskforce

-Water Quality Assessment Listing methodology for HHC/tissue (Matt/Chad)

-Total dissolved gas (Chad)

-Tribal TAS and updated WQS

-Progress Update on UAA work in Washington (Cheryl/Elaine)

-Variance webinars for R10 states (starting this summer)

### NWEA litigation meeting:

-Background on litigation (Angela)

-NWEA petition on toxics (Human health and aquatic life)

-Potential revisions to the Natural Conditions Criteria update

Message

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**From:** Chung, Angela [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B3E49FCBA1AD46F1BDBE92EBB4936350-CHUNG, ANGELA]  
**Sent:** 8/4/2018 12:20:55 AM  
**To:** Bartlett, Heather (ECY) (heba461@ECY.WA.GOV) [heba461@ECY.WA.GOV]  
**Subject:** FW: Washington Human Health Criteria Petition  
**Attachments:** 18-000-9628 WA WQS Petition signed.pdf; ATT00001.htm

And tribes.

Angela Chung  
Associate Director, Office of Water and Watersheds  
U.S. Environmental Protection Agency  
1200 Sixth Ave, Suite 155, OWW 191  
Seattle, WA 98101  
Phone: 206-553-6511

Begin forwarded message:

**From:** "Opalski, Dan" <Opalski.Dan@epa.gov>  
**Date:** August 3, 2018 at 4:38:15 PM PDT  
**To:** "jparker@nwifc.org" <jparker@nwifc.org>, "director@critfc.org" <director@critfc.org>, "dr@ucut-nsn.org" <dr@ucut-nsn.org>, "scott.hauser@usrf.org" <scott.hauser@usrf.org>, "rtoccoordinator@region10rtoc.net" <rtoccoordinator@region10rtoc.net>, "billy@curyungtribe.com" <billy@curyungtribe.com>  
**Cc:** "Wilson, Wenona" <Wilson.Wenona@epa.gov>, Marylou Soscia <Soscia.Marylou@epa.gov>  
**Subject:** Washington Human Health Criteria Petition

Justin, Jaime, DR, Scott, Randi and Billy –

As many Tribes in the Pacific Northwest and Alaska have been engaged in and/or following issues around human health criteria, we wanted to share this very recent letter with you and would appreciate your assistance in informing your member Tribes.

Mary Lou Soscia ([soscia.marylou@epa.gov](mailto:soscia.marylou@epa.gov) or 503/326-5873) will be our initial point of contact on this matter.

Thank you.

Dan Opalski  
Director  
Office of Water and Watersheds  
U.S. Environmental Protection Agency, Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
206-553-1855  
FAX: 206-553-1280

Message

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**From:** Edmondson, Lucy [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B4B8581BCD444DEE9C784CF53201E90F-EDMONDSON, LUCY]  
**Sent:** 8/5/2018 3:40:08 PM  
**To:** Zehm, Polly (ECY) [pzeh461@ECY.WA.GOV]  
**Subject:** Re: 18-000-9628 WA WQS Petition signed.pdf

Thanks. I will be in tomorrow.

Sent from my iPhone

On Aug 4, 2018, at 5:59 PM, Zehm, Polly (ECY) <pzeh461@ECY.WA.GOV> wrote:

Begin forwarded message:

**From:** "Bartlett, Heather (ECY)" <heba461@ECY.WA.GOV>  
**Date:** August 3, 2018 at 5:18:20 PM PDT  
**To:** "Bellon, Maia (ECY)" <maib461@ECY.WA.GOV>, "Zehm, Polly (ECY)" <pzeh461@ECY.WA.GOV>, "Clifford, Denise (ECY)" <decl461@ECY.WA.GOV>, "Duff, Robert (GOV)" <robert.duff@gov.wa.gov>  
**Cc:** "Beeler, Brook (ECY)" <BBEE461@ECY.WA.GOV>, "Peck, Sandi (ECY)" <spec461@ECY.WA.GOV>, "Gildersleeve, Melissa (ECY)" <MGIL461@ECY.WA.GOV>  
**Subject:** 18-000-9628 WA WQS Petition signed.pdf

Just received the signed copy of EPA on reconsideration.

<18-000-9628 WA WQS Petition signed.pdf>

Heather Bartlett  
Washington Department of Ecology  
Water Quality Program Manager  
Sent from my iPhone



Message

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**From:** Edmondson, Lucy [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B4B8581BCD444DEE9C784CF53201E90F-EDMONDSON, LUCY]  
**Sent:** 8/6/2018 6:40:02 PM  
**To:** ABOR461@ECY.WA.GOV; grant.pfeifer@ecy.wa.gov  
**CC:** Nickel, Brian [Nickel.Brian@epa.gov]; Bartlett, Heather (ECY) [heba461@ECY.WA.GOV]  
**Subject:** WA Petition Response  
**Attachments:** 18-000-9628 WA WQS Petition signed.pdf

Good Morning Adriane and Grant,

David Ross, EPA's AA for Water sent this letter on Friday afternoon. We sent this to Heather on Friday as well.

I'd like to send the letter with the email below the Spokane River Regional Toxics Task Force this week. Is there an "email group" that I can use?

Thank you

Lucy

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To the members of the Spokane River Regional Toxics Task Force

As many members of the Task Force have been engaged in and/or following issues around human health criteria, we wanted to share this very recent letter with you.

Thank you and please let me know if you have any questions

Lucy

Lucy Edmondson  
Director, Washington Operations Office  
US EPA Region 10  
300 Desmond Drive  
Lacey, WA 98503

office: 360.753.9082

cell: Personal Phone / Ex. 6

Message

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**Sent:** 5/10/2019 6:37:00 PM  
**BCC:** mayor@spokanecity.org; smsimmons@spokanecity.org; ben@whitebluffsconsulting.com; lara@whitebluffsconsulting.com; chris@nwpulpanpaper.org; INFO@afandpa.org; KrisJ@awb.org; GaryC@awb.org; tmielke@greaterspokane.org; ccoon@greaterspokane.org; info@greaterspokane.org; jeff\_miller@treated-wood.org; Dallin@WWPIInstitute.org; Butch@WWPIInstitute.org; Ryan@WWPIInstitute.org; kbbrown@HuntonAK.com; pjohnson@hunton.com; jstuhlmiller@wsfb.com; tdavis@wsfb.com; belsey@wsfb.com; michael.f.boroughs@boeing.com; James.Kilberg@weyerhaeuser.com; Dow.Constantine@kingcounty.gov; calkins.r@portseattle.org; afichthorn@portoftacoma.com; rachel.mccrea@ecy.wa.gov; Annie.Kolb-Nelson@kingcounty.gov; maia.bellon@ecy.wa.gov; polly.zehm@ecy.wa.gov; tom.laurie@ecy.wa.gov; sharlett.mena@ecy.wa.gov; denise.clifford@ecy.wa.gov; rachel.mccrea@ecy.wa.gov; Annie.Kolb-Nelson@kingcounty.gov; ABOR461@ECY.WA.GOV; Lara Floyd [lara@whitebluffsconsulting.com]; Benjamin Floyd [ben@whitebluffsconsulting.com]; ABOR461@ECY.WA.GOV; Amanda Parrish (aparrish@landscouncil.org) [aparrish@landscouncil.org]; Ben Brattebo (bbrattebo@spokanecounty.org) [bbrattebo@spokanecounty.org]; BiJay Adams (bijay@libertylake.org) [bijay@libertylake.org]; Breems, Joel [Joel.Breems@avistacorp.com]; Brent.Downey@kaisertwd.com; crossley@spokanetribe.com; Nickel, Brian [Nickel.Brian@epa.gov]; Bud Leber (bud.leber@kaisertwd.com) [bud.leber@kaisertwd.com]; Cadie Olsen (colsen@spokanecity.org) [colsen@spokanecity.org]; Christopher.Donley@dfw.wa.gov; Craig Borrenpohl (cborrenpohl@postfallsidaho.org) [cborrenpohl@postfallsidaho.org]; daniel.redline@deq.idaho.gov; Dave Dilks (ddilks@limno.com) [ddilks@limno.com]; Dave Knight (dkni461@ecy.wa.gov) [dkni461@ecy.wa.gov]; dave.mcbride@doh.wa.gov; Dennis Brueggemann [dennis@kealliance.org]; Diana Washington (dwas461@ecy.wa.gov) [dwas461@ecy.wa.gov]; Don Keil (donkeil@cdaid.org) [donkeil@cdaid.org]; Doug Krapas (dougkrapas@iepc.com) [dougkrapas@iepc.com]; galenb1@comcast.net; Greg Weeks (Personal Email / Ex. 6) (Personal Email / Ex. 6) Hermanson, Mike [MHERMANSON@spokanecounty.org]; Jeff Donovan (jdonovan@spokanecity.org) [jdonovan@spokanecity.org]; jerry@cforjustice.org; John Beacham (jbeacham@postfallsidaho.org) [jbeacham@postfallsidaho.org]; Ken Windram (kwindram@harsb.org) [kwindram@harsb.org]; Kevin Booth (kevin.booth@avistacorp.com) [kevin.booth@avistacorp.com]; Lisa Dally Wilson (Personal Email / Ex. 6) (Personal Email / Ex. 6) Lydia Newell (lnewell@cforjustice.org) [lnewell@cforjustice.org]; Soscia, Mary Lou [Soscia.Marylou@epa.gov]; Mike Anderson (manderson@cdaid.org) [manderson@cdaid.org]; Mike Coster (mcoster@spokanecity.org) [mcoster@spokanecity.org]; mlascuola@srhd.org; mpetersen@landscouncil.org; Mike Zagar (Personal Email / Ex. 6) (Personal Email / Ex. 6) 'Pond, Elsa' [PondE@wsdot.wa.gov]; Rains, Karl (ECY) [KRAI461@ECY.WA.GOV]; rstevens@cdatribe-nsn.gov; Rich Watson (richard.watson@dfw.wa.gov) [richard.watson@dfw.wa.gov]; rlindsay@spokanecounty.org; sraskell@cdatribe-nsn.gov; Tammie Williams (williamt@wsdot.wa.gov) [williamt@wsdot.wa.gov]; Tom Agnew (tom@agnewConsulting.com) [tom@agnewConsulting.com]; Vikki Barthels (vbarthels@srhd.org) [vbarthels@srhd.org]  
**Subject:** Notice: EPA approves Washington's 2016 human health criteria water quality standards

Dear Colleagues:

Today EPA announced that the agency has approved the human health criteria water quality standards that Washington State originally submitted to the agency in 2016 after determining the state's proposal is protective of its designated uses, based on sound science, and consistent with the Clean Water Act. The current federally-promulgated water quality standards for Washington will remain in effect until the agency completes the process to withdraw these standards. Today's action restores Washington's role as the primary authority for adopting water quality standards in the state and EPA remains committed to supporting the state on implementation of its water quality standards.

#### Background

In August 2016, Washington State's Department of Ecology (Ecology) promulgated water quality standards and submitted them to EPA for approval. This submittal included 192 new human health criteria (HHC) for 97 priority pollutants that are applicable to all surface waters in the state. Ecology's 2016 standards were crafted after years of engagement and collaboration with EPA, stakeholders, and tribes.

In November 2016, EPA partially approved and partially disapproved Washington's water quality standards, approving 45 human health criteria (HHC), disapproving 143 HHC, and taking no action on four HHC. For the HHC that EPA disapproved, EPA finalized a federal rule for Washington in accordance with the Clean Water Act. These federal water quality standards are currently in effect in Washington.

In February 2017, EPA received a petition from several organizations to reconsider the agency's November 2016 partial disapproval. In August 2018, EPA decided to reconsider its 2016 partial disapproval of Washington's HHCs. Upon reconsideration, EPA, through today's action, has reversed the agency's 2016 partial disapproval of certain HHC (excluding arsenic).

EPA intends to propose to withdraw the federally promulgated criteria from the federal rule through a subsequent notice and comment rulemaking process.

More information: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington>

Lucy Edmondson  
Director, Washington Operations Office  
US EPA Region 10  
300 Desmond Drive  
Lacey, WA 98503

office: 360.753.9082

cell: Personal Phone / Ex. 6

Message

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**From:** Peck, Sandi (ECY) [spec461@ECY.WA.GOV]  
**Sent:** 2/21/2017 11:10:40 PM  
**To:** MacIntyre, Mark [Macintyre.Mark@epa.gov]; Chung, Angela [Chung.Angela@epa.gov]  
**CC:** Holsman, Marianne [Holsman.Marianne@epa.gov]; Dunbar, Bill [dunbar.bill@epa.gov]; Philip, Jeff [Philip.Jeff@epa.gov]; Edmondson, Lucy [Edmondson.Lucy@epa.gov]; srud461@ecy.wa.gov; Psyk, Christine [Psyk.Christine@epa.gov]; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Terpening, Dustin (ECY) [DTER461@ECY.WA.GOV]  
**Subject:** RE: MEDIA INQUIRY - Longview Daily News - Washington WQS - FW: FOR IMMEDIATE RELEASE - "Employer Groups Petition EPA to Reconsider Water Rule"

We at Ecology just got notified by AWB of this action and they sent us a copy of their news release.

I will be the spokesperson for Ecology.

Thanks.  
Sandi

Sandi Peck | Director of Communications | WA Department of Ecology | 360.407.7004 o | Personal Phone / Ex. 6 c

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**From:** MacIntyre, Mark [mailto:Macintyre.Mark@epa.gov]  
**Sent:** Tuesday, February 21, 2017 3:06 PM  
**To:** Chung, Angela <Chung.Angela@epa.gov>  
**Cc:** Holsman, Marianne <Holsman.Marianne@epa.gov>; Dunbar, Bill <dunbar.bill@epa.gov>; Philip, Jeff <Philip.Jeff@epa.gov>; Edmondson, Lucy <Edmondson.Lucy@epa.gov>; Peck, Sandi (ECY) <spec461@ECY.WA.GOV>; Howard, Sandy (ECY) <srud461@ECY.WA.GOV>; Psyk, Christine <Psyk.Christine@epa.gov>; Pirzadeh, Michelle <Pirzadeh.Michelle@epa.gov>  
**Subject:** MEDIA INQUIRY - Longview Daily News - Washington WQS - FW: FOR IMMEDIATE RELEASE - "Employer Groups Petition EPA to Reconsider Water Rule"

Angela: Can you call me about this? The Daily News in Longview is looking for reaction. I'm not aware that we've received anything yet. Reporter's deadline is early tomorrow(2/22)

Thanks!

MM

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**From:** Marissa Luck [mailto:MLuck@tdn.com]  
**Sent:** Tuesday, February 21, 2017 2:56 PM  
**To:** MacIntyre, Mark <Macintyre.Mark@epa.gov>  
**Subject:** FW: FOR IMMEDIATE RELEASE - Employer Groups Petition EPA to Reconsider Water Rule

Hi Mark,

This is Marissa from The Daily News. Below is the press release we received from AWB and other industry groups. I just had a few questions:

- What are the key differences between the EPA's water quality standards and the Washington State Dept. of Ecology's water standards?
- Why did EPA feel it needed to approve stricter measures?
- Can you confirm the EPA received this petition?

- What are the next steps for the EPA? Does this constitute a formal appeal of the rule? Legally, does the EPA have to respond?
- Would the EPA reconsider its rule in light of this petition?
- The petitioners argue that the EPA ignored statistical data and stakeholder input. How do you respond to this?

Thank you so much!

Marissa

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**From:** Chris McCabe [<mailto:chris@nwpulpandpaper.org>]

**Sent:** Tuesday, February 21, 2017 1:14 PM

**To:** Chris McCabe <[chris@nwpulpandpaper.org](mailto:chris@nwpulpandpaper.org)>

**Subject:** FOR IMMEDIATE RELEASE - Employer Groups Petition EPA to Reconsider Water Rule

**For more information:**

Chris McCabe, NW Pulp & Paper Association, [chris@nwpulpandpaper.org](mailto:chris@nwpulpandpaper.org), 360.529.8638

Jason Hagey, Association of Washington Business, [JasonH@awb.org](mailto:JasonH@awb.org), 360.943.1600

Todd Mielke, Greater Spokane Incorporated, [tmielke@greaterspokane.org](mailto:tmielke@greaterspokane.org), 509.624-1393

FOR IMMEDIATE RELEASE: February 21, 2017

## **EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

*Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable*

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.

"We are all committed to clean water," said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today's action. "Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders' input. The existing EPA rule fails on all these grounds."

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

“From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable,” McCabe said. “We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance.”

“We were extremely disappointed when EPA’s rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state’s own rule offers a more realistic and feasible approach to water quality.”

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. “The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone’s efforts to improve environmental and health outcomes for Washington residents,” she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA’s new standards. This could put facility operations in jeopardy and dampen employers’ ability to create new jobs, as well as to retain existing ones. “This is an issue that touches every person in every community in Washington state,” said Kris Johnson, President and CEO of the Association of Washington Business. “In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them.”

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

“Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members,” said Washington Farm Bureau CEO John Stuhlmiller. “But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology’s challenging but achievable standards will deliver something that can work for the state.”

“We look forward to working with the state Department of Ecology to replace the EPA’s unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state,” Stuhlmiller concluded.

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Message

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**From:** Edmondson, Lucy [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=B4B8581BCD444DEE9C784CF53201E90F-EDMONDSON, LUCY]  
**Sent:** 5/10/2019 9:04:05 PM  
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**Subject:** Notice: EPA approves Washington's 2016 human health criteria water quality standards

Dear Colleagues:

Today EPA announced that the agency has approved the human health criteria water quality standards that Washington State originally submitted to the agency in 2016 after determining the state's proposal is protective of its designated uses, based on sound science, and consistent with the Clean Water Act. The current federally-promulgated water quality standards for Washington will remain in effect until the agency completes the process to withdraw these standards. Today's action restores Washington's role as the primary authority for adopting water quality standards in the state and EPA remains committed to supporting the state on implementation of its water quality standards.

#### Background

In August 2016, Washington State's Department of Ecology (Ecology) promulgated water quality standards and submitted them to EPA for approval. This submittal included 192 new human health criteria (HHC) for 97 priority pollutants that are applicable to all surface waters in the state. Ecology's 2016 standards were crafted after years of engagement and collaboration with EPA, stakeholders, and tribes.

In November 2016, EPA partially approved and partially disapproved Washington's water quality standards, approving 45 human health criteria (HHC), disapproving 143 HHC, and taking no action on four HHC. For the HHC that EPA disapproved, EPA finalized a federal rule for Washington in accordance with the Clean Water Act. These federal water quality standards are currently in effect in Washington.

In February 2017, EPA received a petition from several organizations to reconsider the agency's November 2016 partial disapproval. In August 2018, EPA decided to reconsider its 2016 partial disapproval of Washington's HHCs. Upon reconsideration, EPA, through today's action, has reversed the agency's 2016 partial disapproval of certain HHC (excluding arsenic).

EPA intends to propose to withdraw the federally promulgated criteria from the federal rule through a subsequent notice and comment rulemaking process.

More information: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington>

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## Appointment

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**Re:** Petition from Washington State stakeholders on federal Human Health Water Quality Criteria for the State.

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# **Treatment Technology Review and Assessment**

**Association of Washington Business  
Association of Washington Cities  
Washington State Association of Counties**

**November 7, 2013**



**500 108th Avenue NE  
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# Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Derivation of the Baseline Study Conditions and Rationale for Selection of Effluent Limitations .....</b>	<b>3</b>
2.1 Summary of Water Quality Criteria.....	3
2.2 Background.....	3
2.3 Assumptions Supporting Selected Ambient Water Quality Criteria and Effluent Limitations .....	4
<b>3.0 Wastewater Characterization Description.....</b>	<b>8</b>
3.1 Summary of Wastewater Characterization .....	8
3.2 Existing Wastewater Treatment Facility .....	8
3.3 Toxic Constituents .....	9
<b>4.0 Treatment Approaches and Costs .....</b>	<b>10</b>
4.1 Summary of Treatment Approach and Costs .....	10
4.2 Constituent Removal – Literature Review .....	10
4.2.1 Polychlorinated Biphenyls.....	10
4.2.2 Mercury .....	11
4.2.3 Arsenic .....	13
4.2.1 Polycyclic Aromatic Hydrocarbons.....	16
4.3 Unit Processes Evaluated .....	17
4.4 Unit Processes Selected .....	20
4.4.1 Baseline Treatment Process.....	22
4.4.2 Advanced Treatment – MF/RO Alternative .....	25
4.4.3 Advanced Treatment – MF/GAC Alternative .....	29
4.5 Steady-State Mass Balance .....	33
4.6 Adverse Environmental Impacts Associated with Advanced Treatment Technologies.....	34
4.7 Costs .....	36
4.7.1 Approach.....	36
4.7.2 Unit Cost Values.....	37
4.7.3 Net Present Value of Total Project Costs and Operations and Maintenance Cost in 2013 Dollars .....	38
4.7.4 Unit Cost Assessment.....	39
4.8 Pollutant Mass Removal .....	44
4.9 Sensitivity Analysis .....	45
<b>5.0 Summary and Conclusions .....</b>	<b>46</b>
<b>6.0 References .....</b>	<b>48</b>

## 7.0 Appendices ..... 51

### List of Tables

Table 1. Treatment Technology Costs in 2013 Dollars for a 5-mgd Facility .....	3
Table 2. Unit Cost by Contaminant for a 5-mgd Facility Implementing Advanced Treatment using Membrane Filtration/Reverse Osmosis .....	4
Table 3: Summary of Effluent Discharge Toxics Limits.....	7
Table 4. General Wastewater Treatment Facility Characteristics .....	8
Table 5: Summary of Arsenic Removal Technologies <sup>1</sup> .....	13
Table 6. Contaminants Removal Breakdown by Unit Process.....	20
Table 7. Unit Processes Description for Each Alternative.....	22
Table 8. Brine Disposal Method Relative Cost Comparison .....	26
Table 9. Energy Breakdown for Each Alternative (5 mgd design flow) .....	35
Table 10. Economic Evaluation Variables .....	37
Table 11. Treatment Technology Total Project Costs in 2013 Dollars for a 5 mgd Facility .....	38
Table 12. Treatment Technology Total Project Costs in 2013 Dollars for a 0.5 mgd Facility and a 25 mgd Facility.....	42
Table 13. Pollutant Mass Removal by Contaminant for a 5 mgd Facility .....	44
Table 14. Unit Cost by Contaminant for a 5 mgd Facility Implementing Advanced Treatment using MF/RO.....	45

### List of Figures

Figure 1. Water Treatment Configuration for Arsenic Removal (WesTech) .....	14
Figure 2. WesTech Pressure Filters for Arsenic Removal .....	15
Figure 3. Baseline Flowsheet – Conventional Secondary Treatment.....	24
Figure 4. Advanced Treatment Flowsheet – Tertiary Microfiltration and Reverse Osmosis .....	28
Figure 5. Advanced Treatment Flowsheet – Tertiary Microfiltration and Granular Activated Carbon.....	32
Figure 6. Primary Clarifier Inputs/Outputs .....	33
Figure 7. Greenhouse Gas Emissions for Each Alternative .....	36
Figure 8: Capital Cost Curve Comparison for Baseline Treatment, MF/RO, and MF/GAC .....	43
Figure 9: NPV Cost Curve Comparison for Baseline Treatment, MF/RO, and MF/GAC .....	43

### List of Appendices

- Appendix A - Unit Process Sizing Criteria
- Appendix B - Greenhouse Gas Emissions Calculation Assumptions

## Acronyms

AACE	Association for the Advancement of Cost Engineering
AOP	advanced oxidation processes
AWB	Association of Washington Businesses
BAC	biological activated carbon
BAP	benzo(a)pyrene
BOD	biochemical oxygen demand
BTU	British thermal unit
CEPT	Chemically-enhanced primary treatment
cf	cubic feet
CIP	clean in place
CRITFC	Columbia River Inter-Tribal Fish Commission
Ecology	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
FCR	fish consumption rate
g/day	grams per day
GAC	granular activated carbon
gal	gallon
gfd	gallons per square foot per day
GHG	greenhouse gas
gpd	gallons per day
gpm	gallons per minute
GWh	giga watt hours
HDR	HDR Engineering, Inc.
HHWQC	human health water quality criteria
HRT	hydraulic residence time
IPCC	Intergovernmental Panel on Climate Change
kg	kilogram
KWh/MG	kilowatt-hours per million gallons
lb	pound
MBR	membrane bioreactor
MCL	maximum contaminant level
MF	microfiltration
mgd	million gallons per day
mg/L	milligrams per liter
MMBTU	million British thermal units
MWh/d	megawatt-hours per day
NF	nanofiltration
ng/L	nanograms per liter
NPDES	National Pollutant Discharge Elimination System
NPV	net present value
O&M	operations and maintenance
ODEQ	Oregon Department of Environmental Quality
PAC	powdered activated carbon
PAH	polycyclic aromatic hydrocarbons
PCB	polychlorinated biphenyls
PE	population equivalents
pg/L	picograms per liter
PIX	potable ion exchange

---

ppm	parts per million
RO	reverse osmosis
SDWA	Safe Drinking Water Act
sf	square feet
SGSP	salinity gradient solar pond
SRT	solids retention time
Study Partners	Association of Washington Businesses/Association of Washington Cities and Washington State Association of Counties consortium
TDS	total dissolved solids
TMDL	total maximum daily load
TSS	total suspended solids
UF	ultrafiltration
µg/L	micrograms per liter
USDA	U.S. Department of Agriculture
UV	ultraviolet
WAC	Washington Administrative Code
WAS	waste activated sludge
WLA	waste load allocation
WWTP	wastewater treatment plant
ZLD	zero liquid discharge

## Executive Summary

This study evaluated treatment technologies potentially capable of meeting the State of Washington Department of Ecology's (Ecology) revised effluent discharge limits associated with revised human health water quality criteria (HHWQC). HDR Engineering, Inc. (HDR) completed a literature review of potential technologies and an engineering review of their capabilities to evaluate and screen treatment methods for meeting revised effluent limits for four constituents of concern: arsenic, benzo(a)pyrene (BAP), mercury, and polychlorinated biphenyls (PCBs). HDR selected two alternatives to compare against an assumed existing baseline secondary treatment system utilized by dischargers. These two alternatives included enhanced secondary treatment with membrane filtration/reverse osmosis (MF/RO) and enhanced secondary treatment with membrane filtration/granulated activated carbon (MF/GAC). HDR developed capital costs, operating costs, and a net present value (NPV) for each alternative, including the incremental cost to implement improvements for an existing secondary treatment facility.

Currently, there are no known facilities that treat to the HHWQC and anticipated effluent limits that are under consideration. Based on the literary review, research, and bench studies, the following conclusions can be made from this study:

- Revised HHWQC based on state of Oregon HHWQC (2001) and U.S. Environmental Protection Agency (EPA) "National Recommended Water Quality Criteria" will result in very low water quality criteria for toxic constituents.
- There are limited "proven" technologies available for dischargers to meet required effluent quality limits that would be derived from revised HHWQC.
  - Current secondary wastewater treatment facilities provide high degrees of removal for toxic constituents; however, they are not capable of compliance with water quality-based National Pollutant Discharge Elimination System (NPDES) permit effluent limits derived from the revised HHWQC.
  - Advanced treatment technologies have been investigated and candidate process trains have been conceptualized for toxics removal.
    - Advanced wastewater treatment technologies may enhance toxics removal rates; however, they will not be capable of compliance with HHWQC-based effluent limits for PCBs. The lowest levels achieved based on the literature review were between <0.00001 and 0.00004 micrograms per liter (µg/L), as compared to a HHWQC of 0.0000064 µg/L.
    - Based on very limited performance data for arsenic and mercury from advanced treatment information available in the technical literature, compliance with revised criteria may or may not be possible, depending upon site specific circumstances.
      - Compliance with a HHWQC for arsenic of 0.018 µg/L appears unlikely. Most treatment technology performance information available in the literature is based on drinking water treatment applications targeting a much higher Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) of 10 µg/L.
      - Compliance with a HHWQC for mercury of 0.005 µg/L appears to be potentially attainable on an average basis, but perhaps not if effluent limits are structured on a maximum monthly, maximum

weekly or maximum daily basis. Some secondary treatment facilities attain average effluent mercury levels of 0.009 to 0.066 µg/L. Some treatment facilities with effluent filters attain average effluent mercury levels of 0.002 to 0.010 µg/L. Additional advanced treatment processes are expected to enhance these removal rates, but little mercury performance data is available for a definitive assessment.

- Little information is available to assess the potential for advanced technologies to comply with revised BAP criteria.
  - Some technologies may be effective at treating identified constituents of concern to meet revised limits while others may not. It is therefore even more challenging to identify a technology that can meet all constituent limits simultaneously.
  - A HHWQC that is one order-of-magnitude less stringent could likely be met for mercury and BAP; however, it appears PCB and arsenic limits would not be met.
- Advanced treatment processes incur significant capital and operating costs.
  - Advanced treatment process to remove additional arsenic, BAP, mercury, and PCBs would combine enhancements to secondary treatment with microfiltration membranes and reverse osmosis or granular activated carbon and increase the estimated capital cost of treatment from \$17 to \$29 in dollars per gallon per day of capacity (based on a 5.0-million-gallon-per-day (mgd) facility).
  - The annual operation and maintenance costs for the advanced treatment process train will be substantially higher (approximately \$5 million - \$15 million increase for a 5.0 mgd capacity facility) than the current secondary treatment level.
- Implementation of additional treatment will result in additional collateral impacts.
  - High energy consumption.
  - Increased greenhouse gas emissions.
  - Increase in solids production from chemical addition to the primaries. Additionally, the membrane and GAC facilities will capture more solids that require handling.
- It appears advanced treatment technology alone cannot meet all revised water quality limits and implementation tools are necessary for discharger compliance.
  - Implementation flexibility will be necessary to reconcile the difference between the capabilities of treatment processes and the potential for HHWQC driven water quality based effluent limits to be lower than attainable with technology

Table 1 indicates that the unit NPV cost for baseline conventional secondary treatment ranges from \$13 to \$28 per gallon per day of treatment capacity. The unit cost for the advanced treatment alternatives increases the range from the low \$20s to upper \$70s on a per gallon per-day of treatment capacity. The resulting unit cost for improving from secondary treatment to advanced treatment ranges between \$15 and \$50 per gallon per day of treatment capacity. Unit costs were also evaluated for both a 0.5 and 25 mgd facility. The range of unit costs for improving a 0.5 mgd from secondary to advanced treatment is \$60 to \$162 per gallon per day of



treatment capacity. The range of unit costs for improving a 25 mgd from secondary to advanced treatment is \$10 to \$35 per gallon per day of treatment capacity.

**Table 1. Treatment Technology Costs in 2013 Dollars for a 5-mgd Facility**

<b>Alternative</b>	<b>Total Construction Cost, 2013 dollars (\$ Million)</b>	<b>O&amp;M Net Present Value, 2013 dollars (\$ Million) ***</b>	<b>Total Net Present Value, 2013 dollars (\$ Million)</b>	<b>NPV Unit Cost, 2013 dollars (\$/gpd)</b>
Baseline (Conventional Secondary Treatment) *	59 - 127	5 - 11	65 - 138	13 - 28
Incremental Increase to Advanced Treatment - MF/RO	48 - 104	26 - 56	75 - 160	15 - 32
Advanced Treatment - MF/RO **	108 - 231	31 - 67	139 - 298	28 - 60
Incremental Increase to Advanced Treatment - MF/GAC	71 - 153	45 - 97	117 - 250	23 - 50
Advanced Treatment - MF/GAC	131 - 280	50 - 108	181 - 388	36 - 78

\* Assumed existing treatment for dischargers. The additional cost to increase the SRT to upwards of 30-days is about \$12 - 20 million additional dollars in total project cost for a 5 mgd design flow.

\*\* Assumes zero liquid discharge for RO brine management, followed by evaporation ponds. Other options are available as listed in Section 4.4.2.

\*\*\* Does not include the cost for labor.

mgd=million gallons per day

MG=million gallons

O&M=operations and maintenance

Net Present Value = total financed cost assuming a 5% nominal discount rate over an assumed 25 year equipment life.

Costs presented above are based on a treatment capacity of 5.0 mgd, however, existing treatment facilities range dramatically across Washington in size and flow treated. The key differences in cost between the baseline and the advanced treatment MF/RO are as follows:

- Larger aeration basins than the baseline to account for the longer SRT (>8 days versus <8 days).
- Additional pumping stations to pass water through the membrane facilities and granulated activated carbon facilities. These are based on peak flows.
- Membrane facilities (equipment, tanks chemical feed facilities, pumping, etc.) and replacement membrane equipment.
- Granulated activated carbon facilities (equipment, contact tanks, pumping, granulated activated carbon media, etc.)
- Additional energy and chemical demand to operate the membrane and granulated activated carbon facilities
- Additional energy to feed and backwash the granulated activated carbon facilities.
- Zero liquid discharge facilities to further concentrate the brine reject.
  - Zero liquid discharge facilities are energy/chemically intensive and they require membrane replacement every few years due to the brine reject water quality.

- Membrane and granulated activated carbon media replacement represent a significant maintenance cost.
- Additional hauling and fees to regenerate granulated activated carbon off-site.

The mass of pollutant removal by implementing advanced treatment was calculated based on reducing current secondary effluent discharges to revised effluent limits for the four pollutants of concern. These results are provided in Table 2 as well as a median estimated unit cost basis for the mass of pollutants removed.

**Table 2. Unit Cost by Contaminant for a 5-mgd Facility Implementing Advanced Treatment using Membrane Filtration/Reverse Osmosis**

Component	PCBs	Mercury	Arsenic	BAPs
Required HHWQC based Effluent Quality (µg/L)	0.0000064	0.005	0.018	0.0013
Current Secondary Effluent Concentration (µg/L)	0.002	0.025	7.5	0.006
Total Mass Removed (lbs) over 25 year Period	0.76	7.6	2,800	1.8
Median Estimated Unit Cost (NPV per total mass removed in pounds over 25 years)	\$290,000,000	\$29,000,000	\$77,000	\$120,000,000

Collateral adverse environmental impacts associated with implementing advanced treatment were evaluated. The key impacts from this evaluation include increased energy use, greenhouse gas production, land requirements and treatment residuals disposal. Operation of advanced treatment technologies could increase electrical energy by a factor of 2.3 to 4.1 over the baseline secondary treatment system. Direct and indirect greenhouse gas emission increases are related to the operation of advanced treatment technologies and electrical power sourcing, with increases of at least 50 to 100 percent above the baseline technology. The energy and air emission implications of advanced treatment employing granulated activated carbon construction of advanced treatment facilities will require additional land area. The availability and cost of land adjacent to existing treatment facilities has not been included in cost estimates, but could be very substantial. It is worthwhile noting residual materials from treatment may potentially be hazardous and their disposal may be challenging to permit. Costs assume zero liquid discharge from the facilities.

## 1.0 Introduction

Washington's Department of Ecology (Ecology) has an obligation to periodically review waterbody "designated uses" and to modify, as appropriate, water quality standards to ensure those uses are protected. Ecology initiated this regulatory process in 2009 for the human health-based water quality criteria (HHWQC) in Washington's *Surface Water Quality Standards* (Washington Administrative Code [WAC] 173-201A). HHWQC are also commonly referred to as "toxic pollutant water quality standards." Numerous factors will influence Ecology's development of HHWQC. The expectation is that the adopted HHWQC will be more stringent than current adopted criteria. National Pollutant Discharge Elimination System (NPDES) effluent limits for permitted dischargers to surface waters are based on U.S. Environmental Protection Agency (EPA) and state guidance. Effluent limits are determined primarily from reasonable potential analyses and waste load allocations (WLAs) from total maximum daily loads (TMDLs), although the permit writer may use other water quality data. Water quality-based effluent limits are set to be protective of factors, including human health, aquatic uses, and recreational uses. Therefore, HHWQC can serve as a basis for effluent limits. The presumption is that more stringent HHWQC will, in time, drive lower effluent limits. The lower effluent limits will require advanced treatment technologies and will have a consequent financial impact on NPDES permittees. Ecology anticipates that a proposed revision to the water quality standards regulation will be issued in first quarter 2014, with adoption in late 2014.

The Association of Washington Businesses (AWB) is recognized as the state's chamber of commerce, manufacturing and technology association. AWB members, along with the Association of Washington Cities and Washington State Association of Counties (collectively referred to as Study Partners), hold NPDES permits authorizing wastewater discharges. The prospect of more stringent HHWQC, and the resulting needs for advanced treatment technologies to achieve lower effluent discharge limits, has led this consortium to sponsor a study to assess technology availability and capability, capital and operations and maintenance (O&M) costs, pollutant removal effectiveness, and collateral environmental impacts of candidate technologies.

The "base case" for the study began with the identification of four nearly ubiquitous toxic pollutants present in many industrial and municipal wastewater discharges, and the specification of pollutant concentrations in well-treated secondary effluent. The pollutants are arsenic, benzo(a)pyrene (BAP), mercury and polychlorinated biphenyls (PCBs), which were selected for review based on available monitoring data and abundant presence in the environment. The purpose of this study is to review the potential water quality standards and associated treatment technologies able to meet those standards for four pollutants.

A general wastewater treatment process and wastewater characteristics were used as the common baseline for comparison with all of the potential future treatment technologies considered. An existing secondary treatment process with disinfection at a flow of 5 million gallons per day (mgd) was used to represent existing conditions. Typical effluent biochemical oxygen demand (BOD) and total suspended solids (TSS) were assumed between 10 and 30 milligrams per liter (mg/L) for such a facility and no designed nutrient or toxics removal was assumed for the baseline existing treatment process.

Following a literature review of technologies, two advanced treatment process options for toxics removal were selected for further evaluation based on the characterization of removal effectiveness from the technical literature review and Study Partners' preferences. The two tertiary treatment options are microfiltration membrane filtration (MF) followed by either reverse osmosis (RO) or granular activated carbon (GAC) as an addition to an existing secondary treatment facility.

The advanced treatment technologies are evaluated for their efficacy and cost to achieve the effluent limitations implied by the more stringent HHWQC. Various sensitivities are examined, including for less stringent adopted HHWQC, and for a size range of treatment systems. Collateral environmental impacts associated with the operation of advanced technologies are also qualitatively described.

## 2.0 Derivation of the Baseline Study Conditions and Rationale for Selection of Effluent Limitations

### 2.1 Summary of Water Quality Criteria

Surface water quality standards for toxics in the State of Washington are being updated based on revised human fish consumption rates (FCRs). The revised water quality standards could drive very low effluent limitations for industrial and municipal wastewater dischargers. Four pollutants were selected for study based on available monitoring data and abundant presence in the environment. The four toxic constituents are arsenic, BAP, mercury, and PCBs.

### 2.2 Background

Ecology is in the process of updating the HHWQC in the state water quality standards regulation. Toxics include metals, pesticides, and organic compounds. The human health criteria for toxics are intended to protect people who consume water, fish, and shellfish. FCRs are an important factor in the derivation of water quality criteria for toxics.

The AWB/City/County consortium (hereafter “Study Partners”) has selected four pollutants for which more stringent HHWQC are expected to be promulgated. The Study Partners recognize that Ecology probably will not adopt more stringent arsenic HHWQC so the evaluation here is based on the current arsenic HHWQC imposed by the National Toxics Rule. Available monitoring information indicates these pollutants are ubiquitous in the environment and are expected to be present in many NPDES discharges. The four pollutants include the following:

- Arsenic
  - Elemental metalloid that occurs naturally and enters the environment through erosion processes. Also widely used in batteries, pesticides, wood preservatives, and semiconductors. Other current uses and legacy sources in fungicides/herbicides, copper smelting, paints/dyes, and personal care products.
- Benzo(a)pyrene (BAP)
  - Benzo(a)pyrene is a polycyclic aromatic hydrocarbon formed by a benzene ring fused to pyrene as the result of incomplete combustion. Its metabolites are highly carcinogenic. Sources include wood burning, coal tar, automobile exhaust, cigarette smoke, and char-broiled food.
- Mercury
  - Naturally occurring element with wide legacy uses in thermometers, electrical switches, fluorescent lamps, and dental amalgam. Also enters the environment through erosion processes, combustion (especially coal), and legacy industrial/commercial uses. Methylmercury is an organometallic that is a bioaccumulative toxic. In aquatic systems, an anaerobic methylation process converts inorganic mercury to methylmercury.
- Polychlorinated Biphenyls (PCBs)
  - Persistent organic compounds historically used as a dielectric and coolant in electrical equipment and banned from production in the U.S. in 1979. Available information indicates continued pollutant loadings to the environment as a byproduct from the use of some pigments, paints, caulking, motor oil, and coal combustion.

## 2.3 Assumptions Supporting Selected Ambient Water Quality Criteria and Effluent Limitations

Clean Water Act regulations require NPDES permittees to demonstrate their discharge will “not cause or contribute to a violation of water quality criteria.” If a “reasonable potential analysis” reveals the possibility of a standards violation, the permitting authority is obliged to develop “water quality-based effluent limits” to ensure standards achievement. In addition, if ambient water quality monitoring or fish tissue assessments reveal toxic pollutant concentrations above HHWQC levels, Ecology is required to identify that impairment (“303(d) listing”) and develop corrective action plans to force reduction in the toxic pollutant discharge or loading of the pollutant into the impaired water body segment. These plans, referred to as total maximum daily loads (TMDLs) or water cleanup plans, establish discharge allocations and are implemented for point discharge sources through NPDES permit effluent limits and other conditions.

The effect of more stringent HHWQC will intuitively result in more NPDES permittees “causing or contributing” to a water quality standards exceedance, and/or more waterbodies being determined to be impaired, thus requiring 303(d) listing, the development of TMDL/water cleanup plans, and more stringent effluent limitations to NPDES permittees whose treated wastewater contains the listed toxic pollutant.

The study design necessarily required certain assumptions to create a “baseline effluent scenario” against which the evaluation of advanced treatment technologies could occur. The Study Partners and HDR Engineering, Inc (HDR) developed the scenario. Details of the baseline effluent scenario are presented in Table 3. The essential assumptions and rationale for selection are presented below:

- Ecology has indicated proposed HHWQC revisions will be provided in first quarter 2014. A Study Partners objective was to gain an early view on the treatment technology and cost implications. Ecology typically allows 30 or 45 days for the submission of public comments on proposed regulations. To wait for the proposed HHWQC revisions would not allow sufficient time to complete a timely technology/cost evaluation and then to share the study results in the timeframe allowed for public involvement/public comments.
- Coincident with the issuance of the proposed regulation, Ecology has a statutory obligation to provide a Significant Legislative Rule evaluation, one element of which is a “determination whether the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs and the specific directives of the statute being implemented” (RCW 34.05.328(1)(d)). A statutory requirement also exists to assess the impact of the proposed regulation to small businesses. The implication is that Ecology will be conducting these economic evaluations in fourth quarter 2013 and early 2014. The Study Partners wanted to have a completed technology/cost study available to share with Ecology for their significant legislative rule/small business evaluations.
- The EPA, Indian tribes located in Washington, and various special interest groups have promoted the recently promulgated state of Oregon HHWQC (2011) as the “model” for Washington’s revisions of HHWQC. The Oregon HHWQC are generally based on a increased FCR of 175 grams per day (g/day) and an excess cancer risk of  $10^{-6}$ . While the Study Partners do not concede the wisdom or appropriateness of the Oregon criteria, or the selection of scientific/technical elements used to derive those criteria, the Study Partners nevertheless have selected the Oregon HHWQC as a viable “starting point” upon which this study could be based.

- The scenario assumes generally that Oregon’s HHWQC for ambient waters will, for some parameters in fact, become effluent limitations for Washington NPDES permittees. The reasoning for this important assumption includes:
  - The state of Washington’s NPDES permitting program is bound by the *Friends of Pinto Creek vs. EPA* decision in the United States Court of Appeals for the Ninth Circuit (October 4, 2007). This decision held that no NPDES permits authorizing new or expanded discharges of a pollutant into a waterbody identified as impaired; i.e., listed on CWA section 303(d), for that pollutant, may be issued until such time as “existing dischargers” into the waterbody are “subject to compliance schedules designed to bring the (waterbody) into compliance with applicable water quality standards.” In essence, any new/expanded discharge of a pollutant causing impairment must achieve the HHWQC at the point of discharge into the waterbody.
  - If a waterbody segment is identified as “impaired” (i.e., not achieving a HHWQC), then Ecology will eventually need to produce a TMDL or water cleanup plan. For an existing NPDES permittee with a discharge of the pollutant for which the receiving water is impaired, the logical assumption is that any waste load allocation granted to the discharger will be at or lower than the numeric HHWQC (to facilitate recovery of the waterbody to HHWQC attainment). As a practical matter, this equates to an effluent limit established at the HHWQC.
  - Acceptance of Oregon HHWQC as the baseline for technology/cost review also means acceptance of practical implementation tools used by Oregon. The HHWQC for mercury is presented as a fish tissue methyl mercury concentration. For the purposes of NPDES permitting, however, Oregon has developed an implementation management directive which states that any confirmed detection of mercury is considered to represent a “reasonable potential” to cause or contribute to a water quality standards violation of the methyl mercury criteria. The minimum quantification level for total mercury is presented as 0.005 micrograms per liter (µg/L) (5.0 nanograms per liter (ng/L)).
  - The assumed effluent limit for arsenic is taken from EPA’s *National Recommended Water Quality Criteria* (2012) (inorganic, water and organisms,  $10^{-6}$  excess cancer risk). Oregon’s 2011 criterion is actually based on a less protective excess cancer risk ( $10^{-4}$ ). This, however, is the result of a state-specific risk management choice and it is unclear if Washington’s Department of Ecology would mimic the Oregon approach.
  - The assumption is that no mixing zone is granted such that HHWQC will effectively serve as NPDES permit effluent limits. Prior discussion on the impact of the Pinto Creek decision, 303(d) impairment and TMDL Waste Load Allocations processes, all lend support to this “no mixing zone” condition for the parameters evaluated in this study.
- Consistent with Ecology practice in the evaluation of proposed regulations, the HHWQC are assumed to be in effect for a 20-year period. It is assumed that analytical measurement technology and capability will continue to improve over this time frame and this will result in the detection and lower quantification of additional HHWQC in ambient water and NPDES dischargers. This knowledge will trigger the Pinto Creek/303(d)/TMDL issues identified above and tend to pressure NPDES permittees to evaluate and install advanced treatment technologies. The costs and efficacy of treatment for these additional HHWQC is unknown at this time.

Other elements of the Study Partners work scope, as presented to HDR, must be noted:

- The selection of four toxic pollutants and development of a baseline effluent scenario is not meant to imply that each NPDES permittee wastewater discharge will include those pollutants at the assumed concentrations. Rather, the scenario was intended to represent a composite of many NPDES permittees and to facilitate evaluation of advanced treatment technologies relying on mechanical, biological, physical, chemical processes.
- The scalability of advanced treatment technologies to wastewater treatment systems with different flow capacities, and the resulting unit costs for capital and O&M, is evaluated.
- Similarly, a sensitivity analysis on the unit costs for capital and O&M was evaluated on the assumption the adopted HHWQC (and effectively, NPDES effluent limits) are one order-of-magnitude less stringent than the Table 3 values.



**Table 3: Summary of Effluent Discharge Toxics Limits**

Constituent	Human Health Criteria based Limits to be met with no Mixing Zone (µg/L)	Basis for Criteria	Typical Concentration in Municipal Secondary Effluent (µg/L)	Typical Concentration in Industrial Secondary Effluent (µg/L)	Existing Washington HHC (water + org.), NTR (µg/L)
PCBs	0.000064	Oregon Table 40 Criterion (water + organisms) at FCR of 175 grams/day	0.0005 to 0.0025 <sup>b,c,d,e,f</sup>	0.002 to 0.005 <sup>i</sup>	0.0017
Mercury	0.005	DEQ IMD <sup>a</sup>	0.003 to 0.050 <sup>h</sup>	0.010 to 0.050 <sup>h</sup>	0.140
Arsenic	0.018	EPA National Toxics Rule (water + organisms) <sup>k</sup>	0.500 to 5.0 <sup>j</sup>	10 to 40 <sup>j</sup>	0.018
Benzo(a)Pyrene	0.0013	Oregon Table 40 Criterion (water + organisms) at FCR of 175 grams/day	0.00028 to 0.006 <sup>b,g</sup>	0.006 to 1.9	0.0028

<sup>a</sup> Oregon Department of Environmental Quality (ODEQ). Internal Management Directive: Implementation of Methylmercury Criterion in NPDES Permits. January 8, 2013.

<sup>b</sup> Control of Toxic Chemicals in Puget Sound, Summary Technical Report for Phase 3: Loadings from POTW Discharge of Treated Wastewater, Washington Department of Ecology, Publication Number 10-10-057, December 2010.

<sup>c</sup> Spokane River PCB Source Assessment 2003-2007, Washington Department of Ecology, Publication No. 11-03-013, April 2011.

<sup>d</sup> Lower Okanogan River Basin DDT and PCBs Total Maximum Daily Load, Submittal Report, Washington Department of Ecology, Publication Number 04-10-043, October 2004.

<sup>e</sup> Palouse River Watershed PCB and Dieldrin Monitoring, 2007-2008, Wastewater Treatment Plants and Abandoned Landfills, Washington Department of Ecology, Publication No. 09-03-004, January 2009

<sup>f</sup> A Total Maximum Daily Load Evaluation for Chlorinated Pesticides and PCBs in the Walla Walla River, Washington Department of Ecology, Publication No. 04-03-032, October 2004.

<sup>g</sup> Removal of Polycyclic Aromatic Hydrocarbons and Heterocyclic Nitrogenous Compounds by A POTW Receiving Industrial Discharges, Melcer, H., Steel, P. and Bedford, W.K., Water Environment Federation, 66th Annual Conference and Exposition, October 1993.

<sup>h</sup> Data provided by Lincoln Loehr's summary of WDOE Puget Sound Loading data in emails from July 19, 2013.

<sup>i</sup> NCASI memo from Larry Lefleur, NCASI, to Llewellyn Matthews, NWPPA, revised June 17, 2011, summarizing available PCB monitoring data results from various sources.

<sup>j</sup> Professional judgment, discussed in August 6, 2013 team call.

<sup>k</sup> The applicable Washington Human Health Criteria cross-reference the EPA National Toxics Rule, 40 CFR 131.36. The EPA arsenic HHC is 0.018 µg/L for water and organisms.

## 3.0 Wastewater Characterization Description

This section describes the wastewater treatment discharge considered in this technology evaluation. Treated wastewater characteristics are described, including average and peak flow, effluent concentrations, and toxic compounds of concern.

### 3.1 Summary of Wastewater Characterization

A general wastewater treatment process and wastewater characteristics were developed as the common baseline to represent the existing conditions as a starting point for comparison with potential future advanced treatment technologies and improvements. A secondary treatment process with disinfection at a flow of 5 mgd as the current, baseline treatment system for existing dischargers was also developed. Typical effluent biochemical oxygen demand (BOD) and total suspended solids (TSS) were assumed between 10 to 30 mg/L from such a facility and no nutrient or toxics removal was assumed to be accomplished in the existing baseline treatment process.

### 3.2 Existing Wastewater Treatment Facility

The first step in the process is to characterize the existing wastewater treatment plant to be evaluated in this study. The goal is to identify the necessary technology that would need to be added to an existing treatment facility to comply with revised toxic pollutant effluent limits. Rather than evaluating the technologies and costs to upgrade multiple actual operating facilities, the Study Partners specified that a generalized municipal/industrial wastewater treatment facility would be characterized and used as the basis for developing toxic removal approaches. General characteristics of the facility's discharge are described in Table 4.

**Table 4. General Wastewater Treatment Facility Characteristics**

Average Annual Wastewater Flow, mgd	Maximum Month Wastewater Flow, mgd	Peak Hourly Wastewater Flow, mgd	Effluent BOD, mg/L	Effluent TSS, mg/L
5.0	6.25	15.0	10 to 30	10 to 30

mgd=million gallons per day

mg/L=milligrams per liter

BOD=biochemical oxygen demand

TSS=total suspended solids

In the development of the advanced treatment technologies presented below, the capacity of major treatment elements are generally sized to accommodate the maximum month average wastewater flow. Hydraulic elements, such as pumps and pipelines, were selected to accommodate the peak hourly wastewater flow.

The general treatment facility incorporates a baseline treatment processes including influent screening, grit removal, primary sedimentation, suspended growth biological treatment (activated sludge), secondary clarification, and disinfection using chlorine. Solids removed during primary treatment and secondary clarification are assumed to be thickened, stabilized, dewatered, and land applied to agricultural land. The biological treatment process is assumed to be activated sludge with a relatively short (less than 10-day) solids retention time. The baseline secondary treatment facility is assumed not to have processes dedicated to removing nutrients or toxics. However, some coincident removal of toxics will occur during conventional treatment.

### 3.3 Toxic Constituents

As described in Section 2.3, the expectation of more stringent HHWQC will eventually trigger regulatory demands for NPDES permittees to install advanced treatment technologies. The Study Group and HDR selected four specific toxic pollutants reflecting a range of toxic constituents as the basis for this study to limit the constituents and technologies to be evaluated to a manageable level.

The four toxic pollutants selected were PCBs, mercury, arsenic, and BAP, a polycyclic aromatic hydrocarbon (PAH). Mercury and arsenic are metals, and PCBs and PAHs are organic compounds. Technologies for removing metals and organic compounds are in some cases different. Key information on each of the compounds, including a description of the constituent, the significance of each constituent, proposed HHWQC, basis for the proposed criteria, typical concentration in both municipal and industrial secondary effluent, and current Washington state water quality criteria, are shown in Table 3. It is assumed that compliance with the proposed criteria in the table would need to be achieved at the “end of pipe” and Ecology would not permit a mixing zone for toxic constituents. This represents a “worst–case,” but a plausible assumption about discharge conditions.

## 4.0 Treatment Approaches and Costs

### 4.1 Summary of Treatment Approach and Costs

Two advanced treatment process options for toxics removal for further evaluation based on the characterization of removal effectiveness from the technical literature review and Study Group preferences. The two tertiary treatment options are microfiltration MF followed by either RO or GAC as an addition to an existing secondary treatment facility. Based on the literature review, it is not anticipated that any of the treatment options will be effective in reducing all of the selected pollutants to below the anticipated water quality criteria. A summary of the capital and operations and maintenance costs for tertiary treatment is provided, as well as a comparison of the adverse environmental impacts for each alternative.

### 4.2 Constituent Removal – Literature Review

The evaluation of treatment technologies relevant to the constituents of concern was initiated with a literature review. The literature review included a desktop search using typical web-based search engines, and search engines dedicated to technical and research journal databases. At the same time, HDR's experience with the performance of existing treatment technologies specifically related to the four constituents of concern, was used in evaluating candidate technologies. A summary of the constituents of concern and relevant treatment technologies is provided in the following literature review section.

#### 4.2.1 Polychlorinated Biphenyls

PCBs are persistent organic pollutants that can be difficult to remove in treatment. PCB treatment in wastewater can be achieved using oxidation with peroxide, filtration, biological treatment or a combination of these technologies. There is limited information available about achieving ultra-low effluent PCB concentrations near the 0.000064 µg/L range under consideration in the proposed rulemaking process. This review provides a summary of treatment technology options and anticipated effluent PCB concentrations.

Research on the effectiveness of ultraviolet (UV) light and peroxide on removing PCBs was tested in bench scale batch reactions (Yu, Macawile, Abella, & Gallardo 2011). The combination of UV and peroxide treatment achieved PCB removal greater than 89 percent, and in several cases exceeding 98 percent removal. The influent PCB concentration for the batch tests ranged from 50 to 100 micrograms per liter (µg/L). The final PCB concentration (for the one congener tested) was <10 µg/L (10,000 ng/L) for all tests and <5 µg/L (5,000 ng/L) for some tests. The lowest PCB concentrations in the effluent occurred at higher UV and peroxide doses.

Pilot testing was performed to determine the effectiveness of conventional activated sludge and a membrane bioreactor to remove PCBs (Bolzonella, Fatone, Pavan, & Cecchi 2010). EPA Method 1668 was used for the PCB analysis (detection limit of 0.01 ng/L per congener). Influent to the pilot system was a combination of municipal and industrial effluent. The detailed analysis was for several individual congeners. Limited testing using the Aroclor method (total PCBs) was used to compare the individual congeners and the total concentration of PCBs. Both conventional activated sludge and membrane bioreactor (MBR) systems removed PCBs. The effluent MBR concentrations ranged from <0.01 ng/L to 0.04 ng/L compared to <0.01 ng/L to 0.88 ng/L for conventional activated sludge. The pilot testing showed that increased solids retention time (SRT) and higher mixed liquor suspended solids concentrations in the MBR system led to increased removal in the liquid stream.

Bench scale studies were completed to test the effectiveness of GAC and biological activated carbon (BAC) for removing PCBs (Ghosh, Weber, Jensen, & Smith 1999). The effluent from the

GAC system was 800 ng/L. The biological film in the BAC system was presumed to support higher PCB removal with effluent concentrations of 200 ng/L. High suspended sediment in the GAC influent can affect performance. It is recommended that filtration be installed upstream of a GAC system to reduce solids and improve effectiveness.

Based on limited available data, it appears that existing municipal secondary treatment facilities in Washington state are able to reduce effluent PCBs to the range approximately 0.10 to 1.5 ng/L. It appears that the best performing existing municipal treatment facility in Washington state with a microfiltration membrane is able to reduce effluent PCBs to the range approximately 0.00019 to 0.00063 µg/L. This is based on a very limited data set and laboratory blanks covered a range that overlapped with the effluent results (blanks 0.000058 to 0.00061 µg/L).

Addition of advanced treatment processes would be expected to enhance PCB removal rates, but the technical literature does not appear to provide definitive information for guidance. A range of expected enhanced removal rates might be assumed to vary widely from level of the reference microfiltration facility of 0.19 to 0.63 ng/L.

### Summary of PCB Technologies

The literature review revealed there are viable technologies available to reduce PCBs **but no research was identified with treatment technologies capable of meeting the anticipated human health criteria based limits for PCB removal**. Based on this review, a tertiary process was selected to biologically reduce PCBs and separate the solids using tertiary filtration. Alternately, GAC was investigated as an option to reduce PCBs, although it is not proven that it will meet revised effluent limits.

#### 4.2.2 Mercury

Mercury removal from wastewater can be achieved using precipitation, adsorption, filtration, or a combination of these technologies. There is limited information available about achieving ultra-low effluent mercury concentrations near the 5 ng/L range under consideration in the proposed rulemaking process. This review provides a summary of treatment technology options and anticipated effluent mercury concentrations.

Precipitation (and co-precipitation) involves chemical addition to form a particulate and solids separation, using sedimentation or filtration. Precipitation includes the addition of a chemical precipitant and pH adjustment to optimize the precipitation reaction. Chemicals can include metal salts (ferric chloride, ferric sulfate, ferric hydroxide, or alum), pH adjustment, lime softening, or sulfide. A common precipitant for mercury removal is sulfide, with an optimal pH between 7 and 9. The dissolved mercury is precipitated with the sulfide to form an insoluble mercury sulfide that can be removed through clarification or filtration. One disadvantage of precipitation is the generation of a mercury-laden sludge that will require dewatering and disposal. The mercury sludge may be considered a hazardous waste and require additional treatment and disposal at a hazardous waste site. The presence of other compounds, such as other metals, may reduce the effectiveness of mercury precipitation/co-precipitation. For low-level mercury treatment requirements, several treatment steps will likely be required in pursuit of very low effluent targets.

EPA compiled a summary of facilities that are using precipitation/co-precipitation for mercury treatment (EPA 2007). Three of the full-scale facilities were pumping and treating groundwater and the remaining eight facilities were full-scale wastewater treatment plants. One of the pump and treat systems used precipitation, carbon adsorption, and pH adjustment to treat groundwater to effluent concentrations of 300 ng/L.

Adsorption treatment can be used to remove inorganic mercury from water. While adsorption can be used as a primary treatment step, it is frequently used for polishing after a preliminary treatment step (EPA 2007). One disadvantage of adsorption treatment is that when the adsorbent is saturated, it either needs to be regenerated or disposed of and replaced with new adsorbent. A common adsorbent is GAC. There are several patented and proprietary adsorbents on the market for mercury removal. Adsorption effectiveness can be affected by water quality characteristics, including high solids and bacterial growth, which can cause media blinding. A constant and low flow rate to the adsorption beds increases effectiveness (EPA 2007). The optimal pH for mercury adsorption on GAC is pH 4 to 5; therefore, pH adjustment may be required.

EPA compiled a summary of facilities that are using adsorption for mercury treatment (EPA 2007). Some of the facilities use precipitation and adsorption as described above. The six summarized facilities included two groundwater treatment and four wastewater treatment facilities. The reported effluent mercury concentrations were all less than 2,000 ng/L (EPA 2007).

Membrane filtration can be used in combination with a preceding treatment step. The upstream treatment is required to precipitate soluble mercury to a particulate form that can be removed through filtration. According to the EPA summary report, ultrafiltration is used to remove high-molecular weight contaminants and solids (EPA 2007). The treatment effectiveness can depend on the source water quality since many constituents can cause membrane fouling, decreasing the effectiveness of the filters. One case study summarized in the EPA report showed that treatment of waste from a hazardous waste combustor treated with precipitation, sedimentation, and filtration achieved effluent mercury concentrations less than the detection limit of 200 ng/L.

Bench-scale research performed at the Oak Ridge Y-12 Plant in Tennessee evaluated the effectiveness of various adsorbents for removing mercury to below the NPDES limit of 12 ng/L and the potential revised limit of 51 ng/L (Hollerman et al. 1999). Several proprietary adsorbents were tested, including carbon, polyacrylate, polystyrene, and polymer adsorption materials. The adsorbents with thiol-based active sites were the most effective. Some of the adsorbents were able to achieve effluent concentrations less than 51 ng/L but none of the adsorbents achieved effluent concentrations less than 12 ng/L.

Bench-scale and pilot-scale testing performed on refinery wastewater was completed to determine treatment technology effectiveness for meeting very low mercury levels (Urgun-Demirtas, Benda, Gillenwater, Negri, Xiong & Snyder 2012) (Urgun-Demirtas, Negri, Gillenwater, Agwu Nnanna & Yu 2013). The Great Lakes Initiative water quality criterion for mercury is less than 1.3 ng/L for municipal and industrial wastewater plants in the Great Lakes region. This research included an initial bench scale test including membrane filtration, ultrafiltration, nanofiltration, and reverse osmosis to meet the mercury water quality criterion. The nanofiltration and reverse osmosis required increased pressures for filtration and resulted in increased mercury concentrations in the permeate. Based on this information and the cost difference between the filtration technologies, a pilot-scale test was performed. The 0.04 um PVDF GE ZeeWeed 500 series membranes were tested. The 1.3 ng/L water quality criterion was met under all pilot study operating conditions. The mercury in the refinery effluent was predominantly in particulate form which was well-suited for removal using membrane filtration.

Based on available data, it appears that existing municipal treatment facilities are capable of reducing effluent mercury to near the range of the proposed HHWQC on an average basis. Average effluent mercury in the range of 1.2 to 6.6 ng/L for existing facilities with secondary treatment and enhanced treatment with cloth filters and membranes. The Spokane County plant data range is an average of 1.2 ng/L to a maximum day of 3 ng/L. Addition of

advanced treatment processes such as GAC or RO would be expected to enhance removal rates. Data from the West Basin treatment facility in California suggests that at a detection limit of 7.99 ng/L mercury is not detected in the effluent from this advanced process train. A range of expected enhanced removal rates from the advanced treatment process trains might be expected to range from meeting the proposed standard at 5 ng/L to lower concentrations represented by the Spokane County performance level (membrane filtration) in the range of 1 to 3 ng/L, to perhaps even lower levels with additional treatment. For municipal plants in Washington, this would suggest that effluent mercury values from the two advanced treatment process alternatives might range from 1 to 5 ng/L (0.001 to 0.005 µg/L) and perhaps substantially better, depending upon RO and GAC removals. It is important to note that industrial plants may have higher existing mercury levels and thus the effluent quality that is achievable at an industrial facility would be of lower quality.

### Summary of Mercury Technologies

The literature search revealed limited research on mercury removal technologies at the revised effluent limit of 0.005 µg/L. Tertiary filtration with membrane filters or reverse osmosis showed the best ability to achieve effluent criteria less than 0.005 µg/L.

#### 4.2.3 Arsenic

A variety of treatment technologies can be applied to capture arsenic (Table 5). Most of the information in the technical literature and from the treatment technology vendors is focused on potable water treatment for compliance with a Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) of 10 µg/L. The most commonly used arsenic removal method for a wastewater application (tertiary treatment) is coagulation/ flocculation plus filtration. This method by itself could remove more than 90 to 95 percent of arsenic. Additional post-treatment through adsorption, ion exchange, or reverse osmosis is required for ultra-low arsenic limits in the 0.018 µg/L range under consideration in the proposed rulemaking process. In each case it is recommended to perform pilot-testing of each selected technology.

**Table 5: Summary of Arsenic Removal Technologies<sup>1</sup>**

Technology	Advantages	Disadvantages
Coagulation/filtration	<ul style="list-style-type: none"> <li>• Simple, proven technology</li> <li>• Widely accepted</li> <li>• Moderate operator training</li> </ul>	<ul style="list-style-type: none"> <li>• pH sensitive</li> <li>• Potential disposal issues of backwash waste</li> <li>• As<sup>+3</sup> and As<sup>+5</sup> must be fully oxidized</li> </ul>
Lime softening	<ul style="list-style-type: none"> <li>• High level arsenic treatment</li> <li>• Simple operation change for existing lime softening facilities</li> </ul>	<ul style="list-style-type: none"> <li>• pH sensitive (requires post treatment adjustment)</li> <li>• Requires filtration</li> <li>• Significant sludge operation</li> </ul>
Adsorptive media	<ul style="list-style-type: none"> <li>• High As<sup>+5</sup> selectivity</li> <li>• Effectively treats water with high total dissolved solids (TDS)</li> </ul>	<ul style="list-style-type: none"> <li>• Highly pH sensitive</li> <li>• Hazardous chemical use in media regeneration</li> <li>• High concentration SeO<sub>4</sub><sup>-2</sup>, F<sup>-</sup>, Cl<sup>-</sup>, and SO<sub>4</sub><sup>-2</sup> may limit arsenic removal</li> </ul>

**Table 5: Summary of Arsenic Removal Technologies<sup>1</sup>**

Technology	Advantages	Disadvantages
Ion exchange	<ul style="list-style-type: none"> <li>• Low contact times</li> <li>• Removal of multiple anions, including arsenic, chromium, and uranium</li> </ul>	<ul style="list-style-type: none"> <li>• Requires removal of iron, manganese, sulfides, etc. to prevent fouling</li> <li>• Brine waste disposal</li> </ul>
Membrane filtration	<ul style="list-style-type: none"> <li>• High arsenic removal efficiency</li> <li>• Removal of multiple contaminants</li> </ul>	<ul style="list-style-type: none"> <li>• Reject water disposal</li> <li>• Poor production efficiency</li> <li>• Requires pretreatment</li> </ul>

<sup>1</sup>Adapted from WesTech

The removal of arsenic in activated sludge is minimal (less than 20 percent) (Andrianisa et al. 2006), but biological treatment can control arsenic speciation. During aerobic biological process As (III) is oxidized to As (V). Coagulation/flocculation/filtration removal, as well as adsorption removal methods, are more effective in removal of As(V) vs. As (III). A combination of activated sludge and post-activated sludge precipitation with ferric chloride (addition to MLSS and effluent) results in a removal efficiency of greater than 95 percent. This combination could decrease As levels from 200 µg/L to less than 5 µg/L (5,000 ng/L) (Andrianisa et al. 2008) compared to the 0.018 µg/L range under consideration in the proposed rulemaking process.

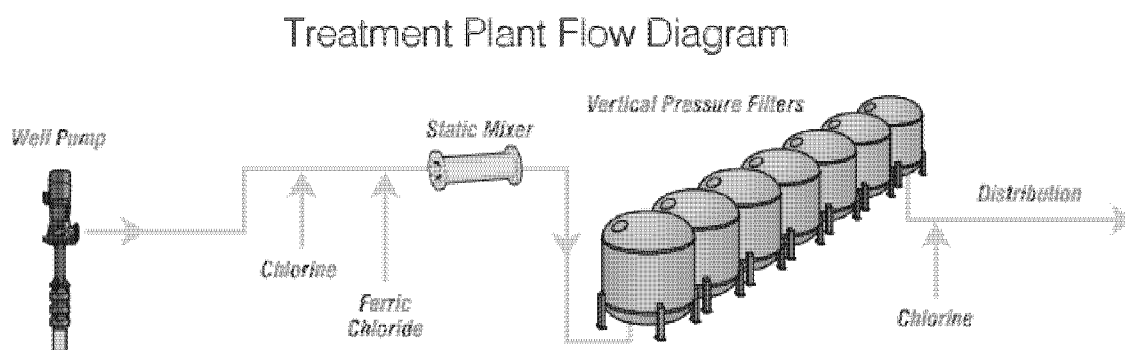
Data from the West Basin facility (using MF/RO/AOP) suggests effluent performance in the range of 0.1 to 0.2 µg/L, but it could also be lower since a detection limit used there of 0.15 µg/l is an order of magnitude higher than the proposed HHWQC. A range of expected enhanced removal rates might be assumed to equivalent to that achieved at West Basin in 0.1 to 0.2 µg/L range.

## Review of Specific Technologies for Arsenic Removal

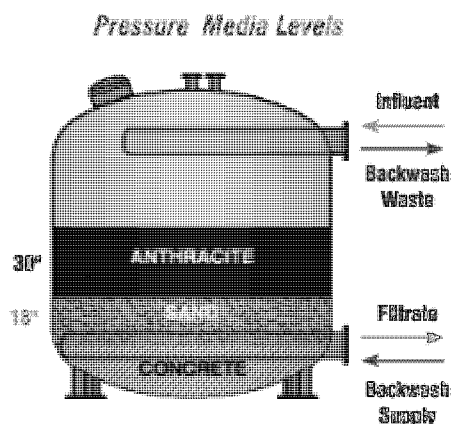
### *Coagulation plus Settling or Filtration*

Coagulation may remove more than 95 percent of arsenic through the creation of particulate metal hydroxides. Ferric sulfite is typically more efficient and applicable to most wastewater sources compared to alum. The applicability and extent of removal should be pilot-tested, since removal efficiency is highly dependent on the water constituents and water characteristics (i.e., pH, temperature, solids).

Filtration can be added after or instead of settling to increase arsenic removal. Example treatment trains with filtration are shown in Figures 1 and 2, respectively.

**Figure 1. Water Treatment Configuration for Arsenic Removal (WesTech)**





**Figure 2. WesTech Pressure Filters for Arsenic Removal**

One system for treatment of potable water with high levels of arsenic in Colorado (110 parts per million [ppm]) consists of enhanced coagulation followed by granular media pressure filters that include anthracite/silica sand/garnet media (WesTech). The arsenic levels were reduced to less than the drinking water MCL, which is 10 µg/L (10,000 ng/L). The plant achieves treatment by reducing the pH of the raw water to 6.8 using sulfuric acid, and then adding approximately 12 to 14 mg/L ferric sulfate. The water is filtered through 16 deep bed vertical pressure filters, the pH is elevated with hydrated lime and is subsequently chlorinated and fed into the distribution system (<http://www.westech-inc.com/public/uploads/global/2011/3/Fallon%20NV%20Installation%20ReportPressureFilter.pdf>).

### ***Softening (with lime)***

Removes up to 90 percent arsenic through co-precipitation, but requires pH to be higher than 10.2.

### ***Adsorption processes***

Activated alumina is considered an adsorptive media, although the chemical reaction is an exchange of arsenic ions with the surface hydroxides on the alumina. When all the surface hydroxides on the alumina have been exchanged, the media must be regenerated. Regeneration consists of backwashing, followed by sodium hydroxide, flushing with water and neutralization with a strong acid. Effective arsenic removal requires sufficient empty bed contact time. Removal efficiency can also be impacted by the water pH, with neutral or slightly acidic conditions being considered optimum. If As (III) is present, it is generally advisable to increase empty bed contact time, as As (III) is adsorbed more slowly than As (V). Alumina dissolves slowly over time due to contact with the chemicals used for regeneration. As a result, the media bed is likely to become compacted if it is not backwashed periodically.

Granular ferric hydroxide works by adsorption, but when the media is spent it cannot be regenerated and must be replaced. The life of the media depends upon pH of the raw water, the concentrations of arsenic and heavy metals, and the volume of water treated daily. Periodic backwashing is required to prevent the media bed from becoming compacted and pH may need to be adjusted if it is high, in order to extend media life. For maximum arsenic removal, filters operate in series. For less stringent removal, filters can operate in parallel.

One type of adsorption media has been developed for application to non-drinking water processes for arsenic, phosphate and for heavy metals removal by sorption (Severent Trent Bayoxide® E IN-20). This granular ferric oxide media has been used for arsenic removal from

mining and industrial wastewaters, selenium removal from refinery wastes and for phosphate polishing of municipal wastewaters. Valley Vista drinking water treatment with Bayoxide® E IN-20 media achieves removal from 31-39 µg/L (31,000-39,000 ng/L) to below 10 µg/L MCL. ([http://www.severntrentservices.com/News/Successful Drinking Water Treatment in an Arsenic Hot Spot nwMFT 452.aspx](http://www.severntrentservices.com/News/Successful_Drinking_Water_Treatment_in_an_Arsenic_Hot_Spot_nwMFT_452.aspx)).

Another adsorptive filter media is greensand. Greensand is available in two forms: as glauconite with manganese dioxide bound ionically to the granules and as silica sand with manganese dioxide fused to the granules. Both forms operate in pressure filters and both are effective. Greensand with the silica sand core operates at higher water temperatures and higher differential pressures than does greensand with the glauconite core. Arsenic removal requires a minimum concentration of iron. If a sufficient concentration of iron is not present in the raw water, ferric chloride is added.

WesTech filters with greensand and permanganate addition for drinking water systems can reduce As from 15-25 µg/L to non-detect. Sodium hypochlorite and/or potassium permanganate are added to the raw water prior to the filters. Chemical addition may be done continuously or intermittently, depending on raw water characteristics. These chemicals oxidize the iron in the raw water and also maintain the active properties of the greensand itself. Arsenic removal is via co-precipitation with the iron.

### ***Ion Exchange***

Siemens offers a potable ion exchange (PIX) arsenic water filtration system. PIX uses ion exchange resin canisters for the removal of organic and inorganic contaminants, in surface and groundwater sources to meet drinking water standards.

Filtronics also uses ion exchange to treat arsenic. The technology allows removal for below the SWDA MCL for potable water of 10 µg/L (10,000 ng/L).

### ***Reverse osmosis***

Arsenic is effectively removed by RO when it is in oxidative state As(V) to approximately 1,000 ng/L or less (Ning 2002).

## **Summary of Arsenic Technologies**

The current state of the technology for arsenic removal is at the point where all the processes target the SWDA MCL for arsenic in potable water. Current EPA maximum concentration level for drinking water is 10 ug/l; much higher than 0.0018 µg/L target for arsenic in this study. The majority of the methods discussed above are able to remove arsenic to either EPA maximum contaminant level or to the level of detection. The lowest detection limit of one of the EPA approved methods of arsenic measurements is 20 ng/l (0.020 µg/l) (Grosser, 2010), which is comparable to the 0.018 µg/L limit targeted in this study.

### **4.2.1 Polycyclic Aromatic Hydrocarbons**

#### **BAP During Biological Treatment**

During wastewater treatment process, BAP tends to partition into sludge organic matter (Melcer et al. 1993). Primary and secondary processing could remove up to 60 percent of incoming PAHs and BAP in particular, mostly due to adsorption to sludge (Kindaichi et al., NA, Wayne et al. 2009). Biodegradation of BAP is expected to be very low since there are more than five benzene rings which are resistant to biological degradation. Biosurfactant addition to biological process could partially improve biodegradation, but only up to removal rates of 50 percent (Sponza et al. 2010). Existing data from municipal treatment facilities in Washington state have

influent and effluent concentrations of BAP of approximately 0.30 ng/L indicating that current secondary treatment has limited effectiveness at BAP removal.

### **Methods to Enhance Biological Treatment of BAP**

Ozonation prior to biological treatment could potentially improve biodegradability of BAP (Zeng et al. 2000). In the case of soil remediation, ozonation before biotreatment improved biodegradation by 70 percent (Russo et al. 2012). The overall removal of BAP increased from 23 to 91 percent after exposure of water to 0.5 mg/L ozone for 30 minutes during the simultaneous treatment process and further to 100 percent following exposure to 2.5 mg/L ozone for 60 minutes during the sequential treatment mode (Yerushalmi et al. 2006). In general, to improve biodegradability of BAP, long exposure to ozone might be required (Haaepa et al. 2006).

Sonication pre-treatment or electronic beam irradiation before biological treatment might also make PAHs more bioavailable for biological degradation..

Recent studies reported that a MBR is capable of removing PAHs from wastewater (Rodrigue and Reilly 2009; Gonzaleza et al. 2012). None of the studies listed the specific PAHs constituents removed.

### **Removal of BAP from Drinking Water**

#### ***Activated Carbon***

Since BAP has an affinity to particulate matter, it is removed from the drinking water sources by means of adsorption, such as granular activated carbon (EPA). Similarly, Oleszczuk et al. (2012) showed that addition of 5 percent activated carbon could remove 90 percent of PAHs from the wastewater.

#### ***Reverse Osmosis***

Light (1981) (referenced by Williams, 2003) studied dilute solutions of PAHs, aromatic amines, and nitrosamines and found rejections of these compounds in reverse osmosis to be over 99 percent for polyamide membranes. Bhattacharyya et al. (1987) (referenced by Williams, 2003) investigated rejection and flux characteristics of FT30 membranes for separating various pollutants (PAHs, chlorophenols, nitrophenols) and found membrane rejections were high (>98 percent) for the organics under ionized conditions.

### **Summary of BAP Technologies**

Current technologies show that BAP removal may be 90 percent or greater. The lowest detection limit for BAP measurements is 0.006 µg/L, which is also the assumed secondary effluent BAP concentration assumed for this study. If this assumption is accurate, it appears technologies may exist to remove BAP to a level below the proposed criteria applied as an effluent limit of 0.0013 µg/L; however, detection limits exceed this value and it is impossible to know this for certain.

## **4.3 Unit Processes Evaluated**

Based on the results of the literature review, a wide range of technologies were evaluated for toxic constituent removal. A listing of the technologies is as follows:

- Chemically enhanced primary treatment (CEPT): this physical and chemical technology is based on the addition of a metal salt to precipitate particles prior to primary treatment, followed by sedimentation of particles in the primary clarifiers. This technology has been

shown to effectively remove arsenic but there is little data supporting the claims. As a result, the chemical facilities are listed as optional.

- Activated sludge treatment (with a short SRT of approximately 8 days or less): this biological technology is commonly referred to as secondary treatment. It relies on converting dissolved organics into solids using biomass. Having a short SRT is effective at removing degradable organics referred to as BOD compounds for meeting existing discharge limits. Dissolved constituents with a high affinity to adsorb to biomass (e.g., metals, high molecular weight organics, and others) will be better removed compared to smaller molecular weight organics and recalcitrant compounds which will have minimal removal at a short SRT.
- Enhanced activated sludge treatment (with a long SRT of approximately 8 days or more): this technology builds on secondary treatment by providing a longer SRT, which enhances sorption and biodegradation. The improved performance is based on having more biomass coupled with a more diverse biomass community, especially nitrifiers, which have been shown to assist in removal of some of the more recalcitrant constituents not removed with a shorter SRT (e.g., lower molecular weight PAHs). There is little or no data available on the effectiveness of this treatment for removing BAP.

Additional benefits associated with having a longer SRT are as follows:

- Lower BOD/TSS discharge load to receiving water
- Improved water quality and benefit to downstream users
- Lower effluent nutrient concentrations which reduce algal growth potential in receiving waters
- Reduced receiving water dissolved oxygen demand due to ammonia removal
- Reduced ammonia discharge, which is toxic to aquatic species
- Improved water quality for habitat, especially as it relates to biodiversity and eutrophication
- Secondary clarifier effluent more conditioned for filtration and disinfection
- Greater process stability from the anaerobic/anoxic zones serving as biological selectors
- Coagulation/Flocculation and Filtration: this two-stage chemical and physical process relies on the addition of a metal salt to precipitate particles in the first stage, followed by the physical removal of particles in filtration. This technology lends itself to constituents prone to precipitation (e.g., arsenic).
- Lime Softening: this chemical process relies on increasing the pH as a means to either volatilize dissolved constituents or inactivate pathogens. Given that none of the constituents being studied are expected to volatilize, this technology was not carried forward.
- Adsorptive Media: this physical and chemical process adsorbs constituents to a combination of media and/or biomass/chemicals on the media. There are several types of media, with the most proven and common being GAC. GAC can also serve as a coarse roughing filter.
- Ion Exchange: this chemical technology exchanges targeted constituents with a resin. This technology is common with water softeners where the hard divalent cations are

exchanged for monovalent cations to soften the water. Recently, resins that target arsenic and mercury removal include activated alumina and granular ferric hydroxides have been developed. The resin needs to be cleaned and regenerated, which produces a waste slurry that requires subsequent treatment and disposal. As a result, ion exchange was not considered for further.

- **Membrane Filtration:** This physical treatment relies on the removal of particles larger than the membranes pore size. There are several different membrane pore sizes as categorized below.
  - **Microfiltration (MF):** nominal pore size range of typically between 0.1 to 1 micron. This pore size targets particles, both inert and biological, and bacteria. If placed in series with coagulation/flocculation upstream, dissolved constituents precipitated out of solution and bacteria can be removed by the MF membrane.
  - **Ultrafiltration (UF):** nominal pore size range of typically between 0.01 to 0.1 micron. This pore size targets those solids removed with MF (particles and bacteria) plus viruses and some colloidal material. If placed in series with coagulation/flocculation upstream, dissolved constituents precipitated out of solution can be removed by the UF membrane.
  - **Nanofiltration (NF):** nominal pore size range of typically between 0.001 to 0.010 micron. This pore size targets those removed with UF (particles, bacteria, viruses) plus colloidal material. If placed in series with coagulation/flocculation upstream, dissolved constituents precipitated out of solution can be removed by the NF membrane.
- **MBR (with a long SRT):** this technology builds on secondary treatment whereby the membrane (microfiltration) replaces the secondary clarifier for solids separation. As a result, the footprint is smaller, the mixed liquor suspended solids concentration can be increased to about 5,000 – 10,000 mg/L, and the physical space required for the facility reduced when compared to conventional activated sludge. As with the activated sludge option operated at a longer SRT, the sorption and biodegradation of organic compounds are enhanced in the MBR process. The improved performance is based on having more biomass coupled with a more diverse biomass community, especially nitrifiers which have been shown to assist in removal of persistent dissolved compounds (e.g., some PAHs). There is little or no data available on effectiveness at removing BAP. Although a proven technology, MBRs were not carried further in this technology review since they are less likely to be selected as a retrofit for an existing activated sludge (with a short SRT) secondary treatment facility. The MBR was considered to represent a treatment process approach more likely to be selected for a new, greenfield treatment facility. Retrofits to existing secondary treatment facilities can accomplish similar process enhancement by extending the SRT in the activated sludge process followed by the addition of tertiary membrane filtration units.
- **RO:** This physical treatment method relies on the use of sufficient pressure to osmotically displace water across the membrane surface while simultaneously rejecting most salts. RO is very effective at removing material smaller than the size ranges for the membrane filtration list above, as well as salts and other organic compounds. As a result, it is expected to be more effective than filtration and MBR methods described above at removing dissolved constituents. Although effective, RO produces a brine reject water that must be managed and disposed.

- Advanced Oxidation Processes (AOPs): this broad term considers all chemical and physical technologies that create strong hydroxyl-radicals. Examples of AOPs include Fenton's oxidation, ozonation, ultraviolet/hydrogen peroxide (UV-H<sub>2</sub>O<sub>2</sub>), and others. The radicals produced are rapid and highly reactive at breaking down recalcitrant compounds. Although effective at removing many complex compounds such as those evaluated in this study, AOPs does not typically have as many installations as membranes and activated carbon technologies. As a result, AOPs were not carried forward.

Based on the technical literature review discussed above, a summary of estimated contaminant removal rated by unit treatment process is presented in Table 6.

**Table 6. Contaminants Removal Breakdown by Unit Process**

Unit Process	Arsenic	BAP	Mercury	Polychlorinated Biphenyls
Activated Sludge Short SRT	No removal	Partial Removal by partitioning		80% removal; effluent <0.88 ng/L
Activated Sludge Long SRT	No removal	Partial removal by partitioning and/or partially biodegradation; MBR could potentially remove most of BAP		>90% removal with a membrane bioreactor, <0.04 ng/L (includes membrane filtration)
Membrane Filtration (MF)	More than 90 % removal (rejection of bound arsenic)	No removal	<1.3 ng/L	>90% removal with a membrane bioreactor, <0.04 ng/L (includes membrane filtration)
Reverse Osmosis (RO)	More than 90% removal (rejection of bound arsenic and removal of soluble arsenic)	More than 98% removal		
Granular Activated Carbon (GAC)	No removal, removal only when carbon is impregnated with iron	90 % removal	<300 ng/L (precipitation and carbon adsorption)  <51 ng/L (GAC)	<800 ng/L Likely requires upstream filtration
Disinfection	--	--	--	--

## 4.4 Unit Processes Selected

The key conclusion from the literature review was that there is limited, to no evidence, that existing treatment technologies are capable of simultaneously meeting all four of the revised discharge limits for the toxics under consideration. Advanced treatment using RO or GAC is expected to provide the best overall removal of the constituents of concern. It is unclear whether these advanced technologies are able to meet revised effluent limits, however these processes may achieve the best effluent quality of the technologies reviewed. This limitation in the findings is based on a lack of an extensive dataset on treatment removal effectiveness in the technical literature for the constituents of interest at the low levels relevant to the proposed criteria, which

approach the limits of reliable removal performance for the technologies. As Table 6 highlights, certain unit processes are capable of removing a portion, or all, of the removal requirements for each technology. The removal performance for each constituent will vary from facility to facility and require a site-specific, detailed evaluation because the proposed criteria are such low concentrations. In some cases, a facility may only have elevated concentrations of a single constituent of concern identified in this study. In other cases, a discharger may have elevated concentrations of the four constituents identified in this study, as well as others not identified in this study but subject to revised water quality criteria. This effort is intended to describe a planning level concept of what treatment processes are required to comply with discharge limits for all four constituents. Based on the literature review of unit processes above, two different treatment trains were developed for the analysis that are compared against a baseline of secondary treatment as follows:

- **Baseline:** represents conventional secondary treatment that is most commonly employed nationwide at wastewater treatment plants. A distinguishing feature for this treatment is the short solids residence time (SRT) (<8 days) is intended for removal of BOD with minimal removal for the toxic constituents of concern.
- **Advanced Treatment – MF/RO:** builds on baseline with the implementation of a longer SRT (>8 days) and the addition of MF and RO. The longer SRT not only removes BOD, but it also has the capacity to remove nutrients and a portion of the constituents of concern. This alternative requires a RO brine management strategy which will be discussed in sub-sections below.
- **Advanced Treatment – MF/GAC:** this alternative provides a different approach to advanced treatment with MF/RO by using GAC and avoiding the RO reject brine water management concern. Similar to the MF/RO process, this alternative has the longer SRT (>8 days) with the capacity to remove BOD, nutrients, and a portion of the toxic constituents of concern. As a result, the decision was made to develop costs for both advanced treatment options.

A description of each alternative is provided in Table 7. The process flowsheets for each alternative are presented in Figure 3 to Figure 5.

**Table 7. Unit Processes Description for Each Alternative**

Unit Process	Baseline	Advanced Treatment – MF/RO	Advanced Treatment - GAC
Influent Flow	5 mgd	5 mgd	5 mgd
Chemically Enhanced Primary Treatment (CEPT); Optional	--	<ul style="list-style-type: none"> <li>Metal salt addition (alum) upstream of primaries</li> </ul>	<ul style="list-style-type: none"> <li>Metal salt addition (alum) upstream of primaries</li> </ul>
Activated Sludge	<ul style="list-style-type: none"> <li>Hydraulic Residence Time (HRT): 6 hrs</li> <li>Short Solids Residence Time (SRT): &lt;8 days</li> </ul>	<ul style="list-style-type: none"> <li>Hydraulic Residence Time (HRT): 12 hrs (Requires more tankage than the Baseline)</li> <li>Long Solids Residence Time (SRT): &gt;8 days (Requires more tankage than the Baseline)</li> </ul>	<ul style="list-style-type: none"> <li>Hydraulic Residence Time (HRT): 12 hrs (Requires more tankage than the Baseline)</li> <li>Long Solids Residence Time (SRT): &gt;8 days (Requires more tankage than the Baseline)</li> </ul>
Secondary Clarifiers	Hydraulically Limited	Solids Loading Limited (Larger clarifiers than Baseline)	Solids Loading Limited (Larger clarifiers than Baseline)
Microfiltration (MF)	--	Membrane Filtration to Remove Particles and Bacteria	Membrane Filtration to Remove Particles and Bacteria
Reverse Osmosis (RO)	--	Treat 50% of the Flow by RO to Remove Metals and Dissolved Constituents. Sending a portion of flow through the RO and blending it with the balance of plant flows ensures a stable non-corrosive, non-toxic discharge.	--
Reverse Osmosis Brine Reject Mgmt	--	Several Options (All Energy or Land Intensive)	--
Granular Activated Carbon	--	--	Removes Dissolved Constituents
Disinfection	Not shown to remove any of the constituents	Not shown to remove any of the constituents	Not shown to remove any of the constituents

#### 4.4.1 Baseline Treatment Process

A flowsheet of the baseline treatment process is provided in Figure 3. The baseline treatment process assumes the current method of treatment commonly employed by dischargers. For this process, water enters the headworks and undergoes primary treatment, followed by conventional activated sludge (short SRT) and disinfection. The solids wasted in the activated



sludge process are thickened, followed by mixing with primary solids prior to entering the anaerobic digestion process for solids stabilization. The digested biosolids are dewatered to produce a cake and hauled off-site. Since the exact process for each interested facility in Washington is unique, this baseline treatment process was used to establish the baseline capital and O&M costs. The baseline costs will be compared against the advanced treatment alternatives to illustrate the magnitude of the increased costs and environmental impacts.

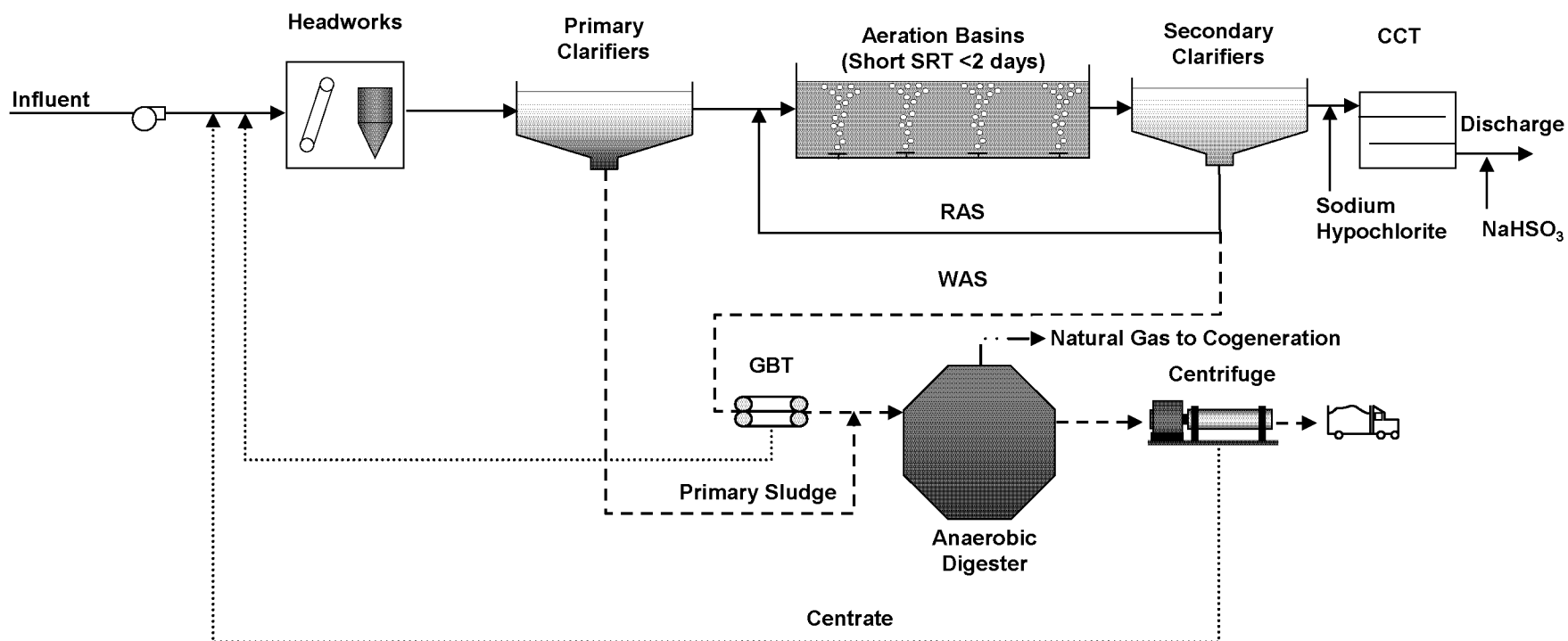


Figure 3. Baseline Flowsheet – Conventional Secondary Treatment

#### 4.4.2 Advanced Treatment – MF/RO Alternative

A flowsheet of the advanced treatment – MF/RO alternative is provided in Figure 4. This alternative builds on the baseline secondary treatment facility, whereby the SRT is increased in the activated sludge process, and MF and RO are added prior to disinfection. The solids treatment train does not change with respect to the baseline. Additionally, a brine management strategy must be considered.

The RO process concentrates contaminants into a smaller volume reject stream. Disposing of the RO reject stream can be a problem because of the potentially large volume of water involved and the concentration of contaminants contained in the brine. For reference, a 5 mgd process wastewater flow might result in 1 mgd of brine reject requiring further management. The primary treatment/handling options for RO reject are as follows:

- Zero liquid discharge
- Surface water discharge
- Ocean discharge
- Haul and discharge to coastal location for ocean discharge
- Sewer discharge
- Deep well injection
- Evaporate in a pond
- Solar pond concentrator

Many of the RO brine reject management options above result in returning the dissolved solids to a “water of the state” such as surface water, groundwater, or marine waters. Past rulings in Washington State have indicated that once pollutants are removed from during treatment they are not to be re-introduced to a water of the state. As a result, technologies with this means for disposal were not considered viable options for management of RO reject water in Washington.

#### Zero Liquid Discharge

Zero liquid discharge (ZLD) is a treatment process that produces a little or no liquid brine discharge but rather a dried residual salt material. This process improves the water recovery of the RO system by reducing the volume of brine that must be treated and disposed of in some manner. ZLD options include intermediate treatment, thermal-based technologies, pressure driven membrane technologies, electric potential driven membrane technologies, and other alternative technologies.

#### Summary

There are many techniques which can be used to manage reject brine water associated with RO treatment. The appropriate alternative is primarily governed by geographic and local constraints. A comparison of the various brine management methods and potential costs are provided in Table 8.

**Table 8. Brine Disposal Method Relative Cost Comparison**

<b>Disposal Method</b>	<b>Description</b>	<b>Relative Capital Cost</b>	<b>Relative O&amp;M Cost</b>	<b>Comments</b>
Zero Liquid Discharge (ZLD)	Further concentrates brine reject for further downstream processing	High	High	This option is preferred as an intermediate step. This rationale is based on the reduction in volume to handle following ZLD. For example, RO reject stream volume is reduced on the order of 50-90%.
Surface Water Discharge	Brine discharge directly to surface water. Requires an NPDES permit.	Lowest	Lowest	Both capital and O&M costs heavily dependent on the distance from brine generation point to discharge. Not an option for nutrient removal.
Ocean Discharge	Discharge through a deep ocean outfall.	Medium	Low	Capital cost depends on location and availability of existing deep water outfall.
Sewer Discharge	Discharge to an existing sewer pipeline for treatment at a wastewater treatment plant.	Low	Low	Both capital and O&M costs heavily dependent on the brine generation point to discharge distance. Higher cost than surface water discharge due to ongoing sewer connection charge. Not an option for wastewater treatment.
Deep Well Injection	Brine is pumped underground to an area that is isolated from drinking water aquifers.	Medium	Medium	Technically sophisticated discharge and monitoring wells required. O&M cost highly variable based on injection pumping energy.
Evaporation Ponds	Large, lined ponds are filled with brine. The water evaporates and a concentrated salt remains.	Low – High	Low	Capital cost highly dependent on the amount and cost of land.
Salinity Gradient Solar Ponds (SGSP)	SGSPs harness solar power from pond to power an evaporative unit.	Low – High	Lowest	Same as evaporation ponds plus added cost of heat exchanger and pumps. Lower O&M cost due to electricity production.
Advanced Thermal Evaporation	Requires a two-step process consisting of a brine concentrator followed by crystallizer	High	Highest	Extremely small footprint, but the energy from H <sub>2</sub> O removal is by far the most energy intensive unless waste heat is used.

Of the listed options, ZLD was considered for this analysis as the most viable approach to RO reject water management. An evaporation pond was used following ZLD. The strength in this combination is ZLD reduces the brine reject volume to treat, which in turn reduces the required evaporation pond footprint. It is important to recognize that the greenhouse gas (GHG) emissions vary widely for the eight brine management options listed above based on energy and chemical intensity.

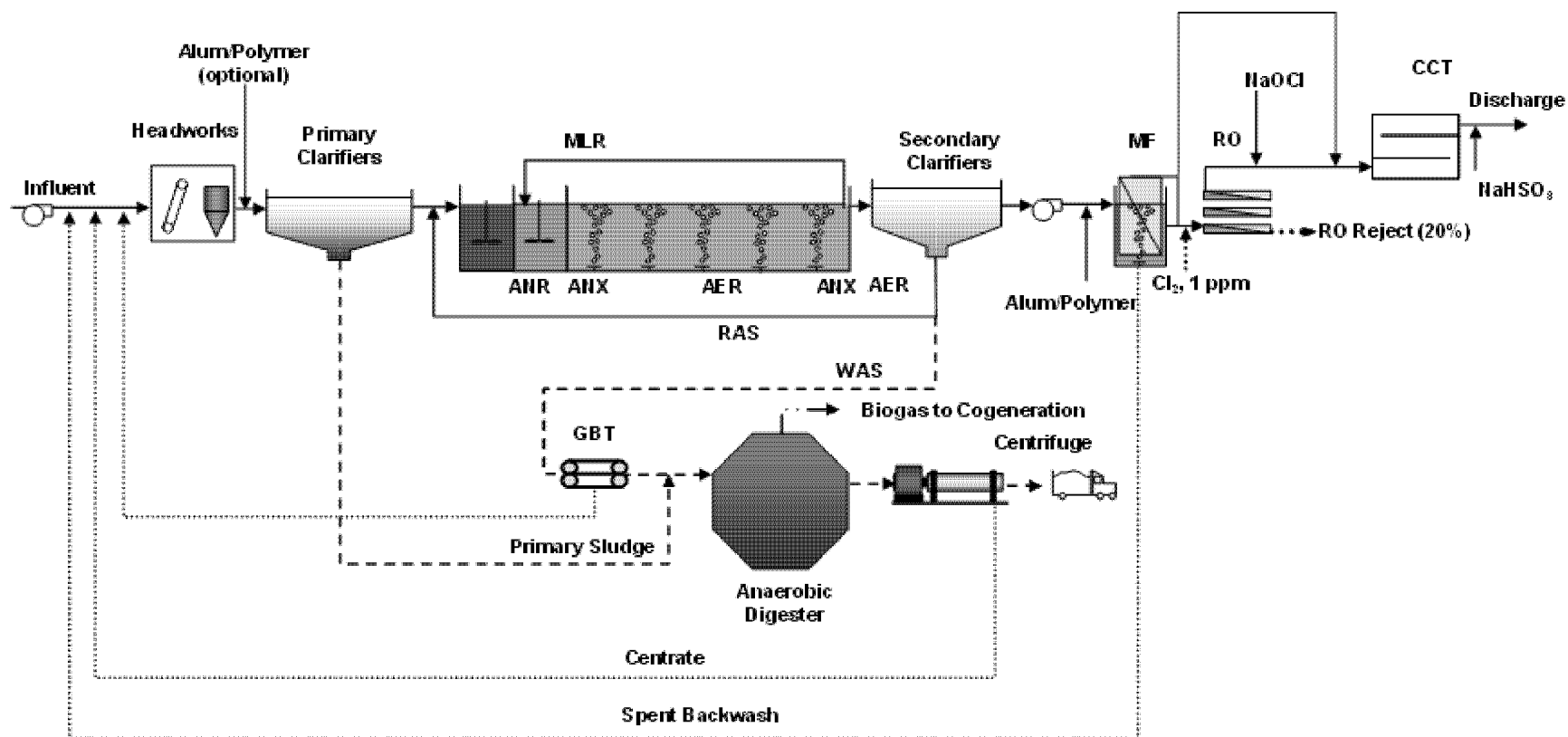


Figure 4. Advanced Treatment Flowsheet – Tertiary Microfiltration and Reverse Osmosis

#### 4.4.3 Advanced Treatment – MF/GAC Alternative

A flowsheet of the advanced treatment – MF/GAC alternative is provided in Figure 5. Following the MF technology, a GAC contactor and media are required.

This alternative was developed as an option that does not require a brine management technology (e.g., ZLD) for comparison to the MF/RO advanced treatment alternative. However, this treatment alternative does require that the GAC be regenerated. A baseline secondary treatment facility can be retrofitted for MF/GAC. If an existing treatment facility has an extended aeration lagoon, the secondary effluent can be fed to the MF/GAC. The longer SRT in the extended aeration lagoon provides all the benefits associated with the long SRT in an activated sludge plant as previously stated:

- Lower BOD/TSS discharge load
- Higher removal of recalcitrant constituents and heavy metals
- Improved water quality and benefit to downstream users
- Less downstream algal growth
- Reduced receiving water dissolved oxygen demand due to ammonia removal
- Reduced ammonia discharge loads, which is toxic to several aquatic species
- Improved water quality for habitat, especially as it relates to biodiversity and eutrophication
- Secondary clarifier effluent more conditioned for filtration and disinfection
- Greater process stability from the anaerobic/anoxic zones serving as a selector

If an existing treatment facility employs a high rate activated sludge process (short SRT) similar to the baseline, it is recommended that the activated sludge process SRT be increased prior to the MF/GAC unit processes. The longer SRT upstream of the MF is preferred to enhance the membrane flux rate, reduce membrane biofouling, increase membrane life, and reduce the chemicals needed for membrane cleaning.

The key technical and operational challenges associated with the tertiary add-on membrane filtration units are as follows:

- The membrane filtration technology is a proven and reliable technology. With over 30 years of experience, it has made the transition in recent years from an emerging technology to a proven and reliable technology.
- Membrane durability dependent on feed water quality. The water quality is individual facility specific.
- Membranes are sensitive to particles, so upstream screening is critical. The newer generations of membranes have technical specifications that require a particular screen size.
- Membrane area requirements based on peak flows as water must pass through the membrane pores. Additionally, membranes struggle with variable hydraulic loading. Flow equalization upstream can greatly reduce the required membrane surface area and provide uniform membrane loading.
- Membrane tanks can exacerbate any foam related issues from the upstream biological process. Foam entrapment in the membrane tank from the upstream

process can reduce membrane filtration capacity and in turn result in a plant-wide foam problem.

- Reliable access to the membrane modules is key to operation and maintenance. Once PLC is functionary properly, overall maintenance requirements for sustained operation of the system are relatively modest.
- The membranes go through frequent membrane relaxing or back pulse and a periodic deep chemical clean in place (CIP) process.
- Sizing of membrane filtration facilities governed by hydraulic flux. Municipal wastewaters have flux values that range from about 20 to 40 gallons per square foot per day (gfd) under average annual conditions. The flux associated with industrial applications is wastewater specific.

Following the MF is the activated carbon facilities. There are two kinds of activated carbon used in treating water: powdered activated carbon (PAC) and GAC. PAC is finely-ground, loose carbon that is added to water, mixed for a short period of time, and removed. GAC is larger than PAC, is generally used in beds or tanks that permit higher adsorption and easier process control than PAC allows, and is replaced periodically. PAC is not selective, and therefore, will adsorb all active organic substances making it an impractical solution for a wastewater treatment plant. As a result, GAC was considered for this analysis. The type of GAC (e.g., bituminous and subbituminous coal, wood, walnut shells, lignite or peat), gradation, and adsorption capacity are determined by the size of the largest molecule/ contaminant that is being filtered (AWWA, 1990).

As water flows through the carbon bed, contaminants are captured by the surfaces of the pores until the carbon is no longer able to adsorb new molecules. The concentration of the contaminant in the treated effluent starts to increase. Once the contaminant concentration in the treated water reaches an unacceptable level (called the breakthrough concentration), the carbon is considered "spent" and must be replaced by virgin or reactivated GAC.

The capacity of spent GAC can be restored by thermal reactivation. Some systems have the ability to regenerate GAC on-site, but in general, small systems haul away the spent GAC for off-site regeneration (EPA 1993). For this study, off-site regeneration was assumed.

The basic facilities and their potential unit processes included in this chapter are as follows:

- GAC supply and delivery
- Influent pumping
  - Low head feed pumping
  - High head feed pumping (assumed for this study as we have low limits so require high beds)
- Contactors and backwash facilities
  - Custom gravity GAC contactor
  - Pre-engineered pressure GAC contactor (Used for this study)
  - Backwash pumping
- GAC transport facilities
  - Slurry pumps
  - Eductors (Used for this study)
- Storage facilities



- Steel tanks
- Concrete tanks (Used for this study; larger plants would typically select concrete tanks)
- Spent carbon regeneration
  - On-site GAC regeneration
  - Off-Site GAC regeneration

Following the MF is the GAC facility. The GAC contactor provides about a 12-min hydraulic residence time for average annual conditions. The GAC media must be regenerated about twice per year in a furnace. The constituents sorbed to the GAC media are removed during the regeneration process. A typical design has full redundancy and additional storage tankage for spent and virgin GAC. Facilities that use GAC need to decide whether they will regenerate GAC on-site or off-site. Due to challenges associated with receiving air emission permits for new furnaces, it was assumed that off-site regeneration would be evaluated.

The key technical and operational challenges associated with the tertiary add-on

GAC units are as follows:

- Nearest vendor to acquire virgin GAC – How frequently can they deliver virgin GAC and what are the hauling costs?
- Contactor selection is typically based on unit cost and flow variation. The concrete contactor is typically more cost effective at higher flows so it was used for this evaluation. The pre-engineered pressure contactor can handle a wider range of flows than a concrete contactor. Additionally, a pressure system requires little maintenance as they are essentially automated
- Periodical contactor backwashing is critical for maintaining the desired hydraulics and control biological growth
- Eductors are preferred over slurry pumps because they have fewer mechanical components. Additionally, the pump with eductors is not in contact with the carbon, which reduces wear.
- Off-site GAC regeneration seems more likely due to the challenges with obtaining an air emissions permit.

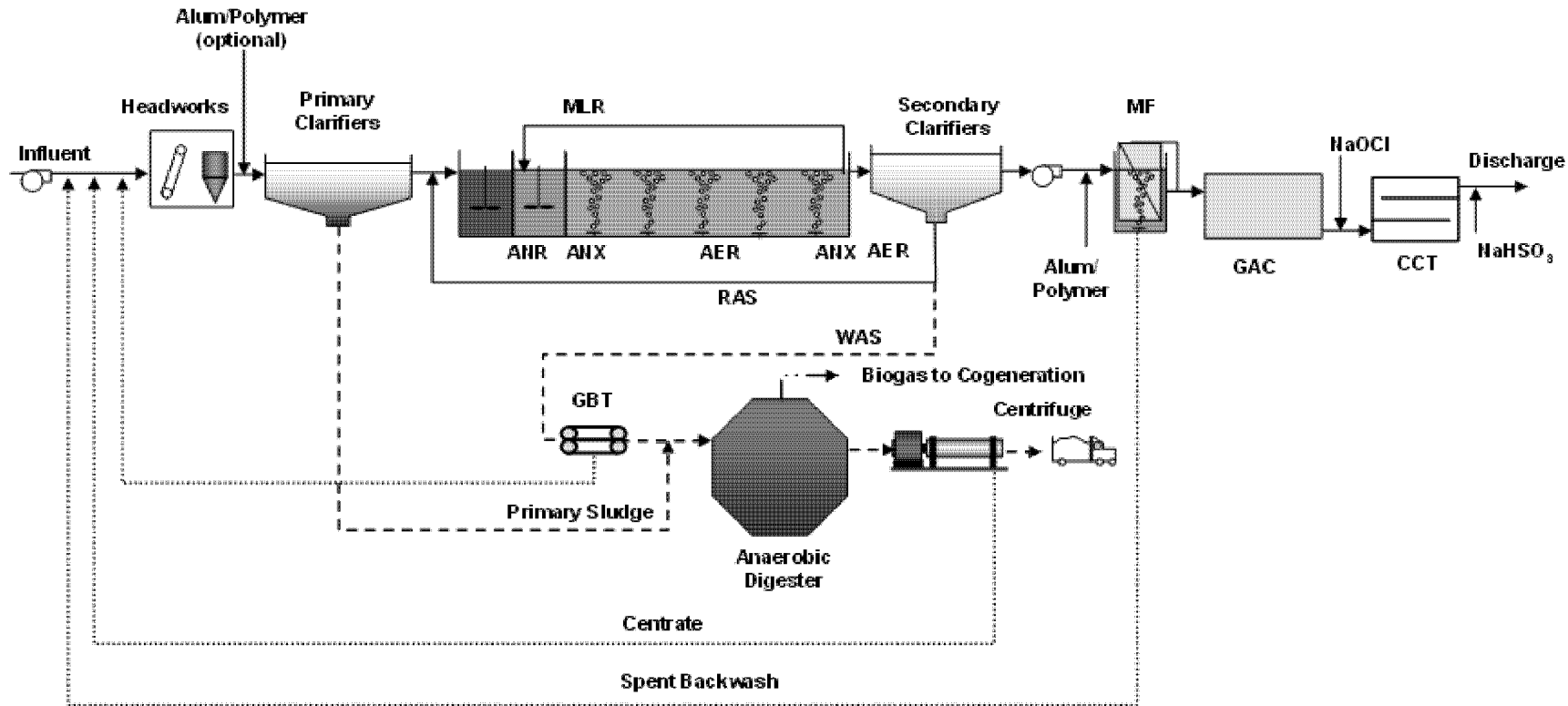


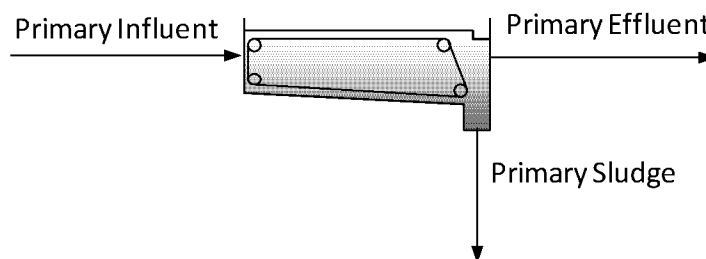
Figure 5. Advanced Treatment Flowsheet – Tertiary Microfiltration and Granular Activated Carbon

## 4.5 Steady-State Mass Balance

HDR used its steady-state mass balance program to calculate the flows and loads within the candidate advanced treatment processes as a means to size facilities. The design of wastewater treatment facilities are generally governed by steady-state mass balances. For a steady-state mass balance, the conservation of mass is calculated throughout the entire wastewater treatment facility for defined inputs. Dynamic mass balance programs exist for designing wastewater facilities, but for a planning level study such as this, a steady state mass balance program is adequate. A dynamic program is generally used for detailed design and is site-specific with associated requirements for more detailed wastewater characterization.

The set of model equations used to perform a steady-state mass balance are referred to as the model. The model equations provide a mathematical description of various wastewater treatment processes, such as an activated sludge process, that can be used to predict unit performance. The program relies on equations for each unit process to determine the flow, load, and concentration entering and leaving each unit process.

An example of how the model calculates the flow, load, and concentration for primary clarifiers is provided below. The steady-state mass balance equation for primary clarifiers has a single input and two outputs as shown in the simplified Figure 6. The primary clarifier feed can exit the primary clarifiers as either effluent or sludge. Solids not removed across the primaries leave as primary effluent, whereas solids captured leave as primary sludge. Scum is not accounted for.



**Figure 6. Primary Clarifier Inputs/Outputs**

The mass balance calculation requires the following input:

- Solids removal percentage across the primaries (based on average industry accepted performance)
- Primary solids thickness (i.e., percent solids) (based on average industry accepted performance)

The steady-state mass balance program provides a reasonable first estimate for the process performance, and an accurate measure of the flows and mass balances at various points throughout the plant. The mass balance results were used for sizing the facility needs for each alternative. A listing of the unit process sizing criterion for each unit process is provided in Appendix A. By listing the unit process sizing criteria, a third-party user could redo the analysis and end up with comparable results. The key sizing criteria that differ between the baseline and treatment alternatives are as follows:

- Aeration basin mixed liquor is greater for the advanced treatment alternatives which in turn requires a larger volume
- The secondary clarifiers are sized based on hydraulic loading for the baseline versus solids loading for the advanced treatment alternatives

- The MF/GAC and MF/RO sizing is only required for the respective advanced treatment alternatives.

## 4.6 Adverse Environmental Impacts Associated with Advanced Treatment Technologies

The transition from the baseline (conventional secondary treatment) to either advanced treatment alternatives has some environmental impacts that merit consideration, including the following:

- Land area for additional system components (which for constrained facility sites, may necessitate land acquisition and encroachment into neighboring properties with associated issues and challenges, etc.).
- Increased energy use and atmospheric emissions of greenhouse gases and criteria air contaminants associated with power generation to meet new pumping requirements across the membrane filter systems (MF and RO) and GAC.
- Increased chemical demand associated with membrane filters (MF and RO).
- Energy and atmospheric emissions associated with granulated charcoal regeneration.
- RO brine reject disposal. The zero liquid discharge systems are energy intensive energy and increase atmospheric emissions as a consequence of the electrical power generation required for removing water content from brine reject.
- Increase in sludge generation while transitioning from the baseline to the advanced treatment alternatives. There will be additional sludge captured with the chemical addition to the primaries and membrane filters (MF and RO). Additionally, the GAC units will capture more solids.
- Benefits to receiving water quality by transitioning from a short SRT (<2 days) in the baseline to a long SRT (>8 days) for the advanced treatment alternatives (as previously stated):
  - Lower BOD/TSS discharge load
  - Higher removal of recalcitrant constituents and heavy metals
  - Improved water quality and benefit to downstream users
  - Reduced nutrient loadings to receiving waters and lower algal growth potential
  - Reduced receiving water dissolved oxygen demand due to ammonia removal
  - Reduced ammonia discharge loads, which is toxic to aquatic species
  - Improved water quality for habitat, especially as it relates to biodiversity and eutrophication
  - Secondary clarifier effluent better conditioned for subsequent filtration and disinfection
  - Greater process stability from the anaerobic/anoxic zones serving as a biological selectors

HDR calculated GHG emissions for the baseline and advanced treatment alternatives. The use of GHG emissions is a tool to normalize the role of energy, chemicals, biosolids hauling, and fugitive emissions (e.g., methane) in a single unit. The mass balance results were used to quantify energy demand and the corresponding GHG emissions for each alternative. Energy

demand was estimated from preliminary process calculations. A listing of the energy demand for each process stream, the daily energy demand, and the unit energy demand is provided in Table 9. The advanced treatment options range from 2.3 to 4.1 times greater than the baseline. This large increase in energy demand is attributed to the energy required to pass water through the membrane barriers and/or the granular activated carbon. Additionally, there is energy required to handle the constituents removed as either regenerating the GAC or handling the RO brine reject water. This additional energy required to treat the removed constituents is presented in Table 9.

**Table 9. Energy Breakdown for Each Alternative (5 mgd design flow)**

Parameter	Units	Baseline	Advanced Treatment – MF/GAC	Advanced Treatment – MF/RO
Daily Liquid Stream Energy Demand	MWh/d	11.6	23.8	40.8
Daily Solids Stream Energy Demand	MWh/d	-1.6	-1.1	-1.1
Daily Energy Demand	MWh/d	10.0	22.7	39.7
Unit Energy Demand	kWh/MG Treated	2,000	4,500	7,900

MWh/d = megawatt hours per day

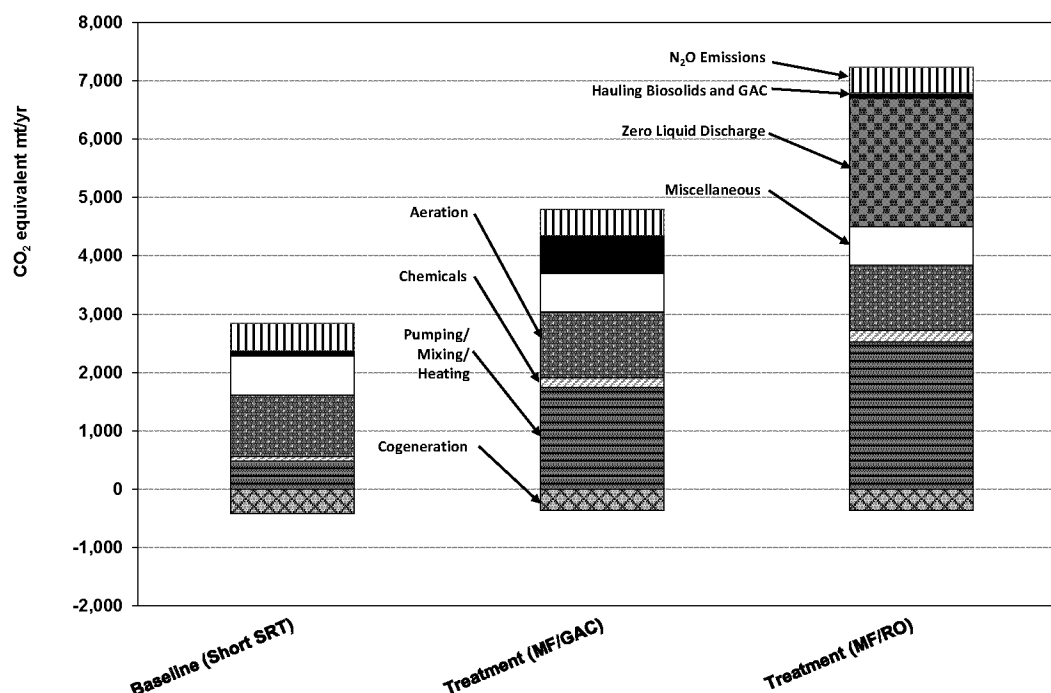
kWh/MG = kilowatt hours per million gallons

Details on the assumptions used to convert between energy demand, chemical demand and production, as well as biologically-mediated gases (i.e., CH<sub>4</sub> and N<sub>2</sub>O) and GHG emissions are provided in Appendix B.

A plot of the GHG emissions for each alternative is shown in Figure 7. The GHG emissions increase from the baseline to the two advanced treatment alternatives. The GHG emissions increase about 50 percent with respect to baseline when MF/GAC is used and the GHG emissions increase over 100 percent with respect to baseline with the MF/RO advanced treatment alternative.

The MF/GAC energy demand would be larger if GAC regeneration was performed on-site. The GHG emissions do not include the energy or air emissions that result from off-site GAC regeneration. Only the hauling associated with moving spent GAC is included. The energy associated with operating the furnace would exceed the GHG emissions from hauling spent GAC.

The zero liquid discharge in the MF/RO alternative alone is comparable to the Baseline. This contribution to increased GHG emissions by zero liquid discharge brine system highlights the importance of the challenges associated with managing brine reject.



**Figure 7. Greenhouse Gas Emissions for Each Alternative**

The use of GHG emissions as a measure of sustainability does not constitute a complete comparison between the baseline and advanced treatment alternatives. Rather, it is one metric that captures the impacts of energy, chemical demand and production, as well as biologically-mediated gases (i.e., CH<sub>4</sub> and N<sub>2</sub>O). The other environmental impacts of advanced treatment summarized in the list above should also be considered in decision making beyond cost analysis.

## 4.7 Costs

Total project costs along with the operations and maintenance costs were developed for each advanced treatment alternative for a comparison with baseline secondary treatment.

### 4.7.1 Approach

The cost estimates presented in this report are planning level opinions of probable construction costs for a nominal 5 mgd treatment plant design flow representing a typical facility without site specific details about local wastewater characteristics, physical site constraints, existing infrastructure, etc. The cost estimates are based on wastewater industry cost references, technical studies, actual project cost histories, and professional experience. The costs presented in this report are considered planning level estimates. A more detailed development of the advanced treatment process alternatives and site specific information would be required to further refine the cost estimates. Commonly this is accomplished in the preliminary design phase of project development for specific facilities following planning.

The cost opinion includes a range of costs associated with the level of detail used in this analysis. Cost opinions based on preliminary engineering can be expected to follow the Association for the Advancement of Cost Engineering (AACE International) Recommended Practice No. 17R-97 Cost Estimate Classification System estimate Class 4. A Class 4 estimate is based upon a 5 to 10 percent project definition and has an expected accuracy range of -30 to +50 percent and typical end usage of budget authorization and cost control. It is considered an

“order-of-magnitude estimate.” The life-cycle costs were prepared using the net present value (NPV) method.

The cost associated for each new unit process is based on a unit variable, such as required footprint, volume, demand (e.g., lb O<sub>2</sub>/hr), and others. This approach is consistent with the approach developed for the EPA document titled “Estimating Water Treatment Costs: Volume 2- Cost Curves Applicable to 1 to 200 mgd Treatment Plants” dated August 1979. The approach has been updated since 1979 to account for inflation and competition, but the philosophy for estimating costs for unit processes has not changed. For example, the aeration system sizing/cost is governed by the maximum month airflow demand. Additionally, the cost associated constructing an aeration basin is based on the volume. The cost considers economies of scale.

The O&M cost estimates were calculated from preliminary process calculations. The operations cost includes energy and chemical demand. For example, a chemical dose was assumed based on industry accepted dosing rates and the corresponding annual chemical cost for that particular chemical was accounted for. The maintenance values only considered replacement equipment, specifically membrane replacement for the Advanced Treatment Alternatives.

#### 4.7.2 Unit Cost Values

The life-cycle cost evaluation was based on using the economic assumptions shown in Table 10. The chemical costs were based on actual values from other projects. To perform detailed cost evaluations per industry, each selected technology would need to be laid out on their respective site plan based on the location of the existing piping, channels, and other necessary facilities.

**Table 10. Economic Evaluation Variables**

Item	Value
Nominal Discount Rate	5%
Inflation Rate:	
General	3.5%
Labor	3.5%
Energy	3.5%
Chemical	3.5%
Base Year	2013
Project Life	25 years
Energy	\$0.06/kWh
Natural Gas	\$0.60/therm
Chemicals:	
Alum	\$1.1/gal
Polymer	\$1.5/gal
Hypochlorite	\$1.5/gal
Salt	\$0.125/lb
Antiscalant	\$12.5/lb
Acid	\$0.35/lb
Deionized Water	\$3.75/1,000 gal

**Table 10. Economic Evaluation Variables**

Item	Value
Hauling	
Biosolids Hauling Distance	100 miles (one way)
Biosolids Truck Volume	6,000 gal/truck
Biosolids Truck Hauling	\$250/truck trip
GAC Regeneration Hauling Distance	250 miles (round trip)
GAC Regeneration Truck Volume	\$20,000 lb GAC/truck
GAC Regeneration Truck Hauling	Included in cost of Virgin GAC

#### 4.7.3 Net Present Value of Total Project Costs and Operations and Maintenance Cost in 2013 Dollars

An estimate of the net present value for the baseline treatment process and the incremental cost to implement the advanced treatment alternatives is shown in Table 11. The cost for the existing baseline treatment process was estimated based on new construction for the entire conventional secondary treatment process (Figure 3). The incremental cost to expand from existing baseline secondary treatment to advanced treatment was calculated by taking the difference between the baseline and the advanced treatment alternatives. These values serve as a benchmark for understanding the prospective cost for constructing advanced treatment at the planning level of process development.

**Table 11. Treatment Technology Total Project Costs in 2013 Dollars for a 5 mgd Facility**

Alternative	Total Construction Cost, 2013 dollars (\$ Million)	O&M Net Present Value, 2013 dollars (\$ Million) *	Total Net Present Value, 2013 dollars (\$ Million)	NPV Unit Cost, 2013 dollars (\$/gpd)
Baseline (Conventional Secondary Treatment) *	59 - 127	5 - 11	65 - 138	13 - 28
Advanced Treatment – MF/RO **	108 - 231	31 - 67	139 - 298	28 - 60
Advanced Treatment – MF/GAC	131 - 280	50 - 108	181 - 388	36 - 78
Incremental Increase to Advanced Treatment MF/RO	48 - 104	26 - 56	75 - 160	15 - 32
Incremental Increase to Advanced Treatment MF/GAC	71 - 153	45 - 97	117 - 250	23 - 50

\* The additional cost to increase the SRT to upwards of 30-days is about \$12 - 20 million additional dollars in total project cost for a 5 mgd design flow

\*\* Assumes zero liquid discharge for RO brine management, followed by evaporation ponds. Other options are available as listed in Section 4.4.2.



#### 4.7.4 Unit Cost Assessment

Costs presented above are based on a treatment capacity of 5.0 mgd, however, existing treatment facilities range dramatically across Washington in size and flow treated. Table 11 indicates that the unit capital cost for baseline conventional secondary treatment for 5.0 mgd ranges between \$13 to 28 per gallon per day of treatment capacity. The unit cost for the advanced treatment alternatives increases the range from the low \$20s to upper \$70s on a per-gallon per-day of capacity. The increase in cost for the advanced treatment alternatives is discussed in the sub-sections below.

##### Advanced Treatment MF/RO

The advanced treatment MF/RO alternative has a total present worth unit cost range of \$28 to \$60 million in per gallon per day of capacity. This translates to an incremental cost increase with respect to the baseline of \$15 to \$32 million dollars in per gallon per day treatment capacity. The key differences in cost between the baseline and the advanced treatment MF/RO are as follows:

- Larger aeration basins than the baseline to account for the longer SRT (<8 days versus >8 days).
- Additional pumping stations to pass water through the membrane facilities (MF and RO). These are based on peak flows.
- Membrane facilities (MF and RO; equipment, tanks chemical feed facilities, pumping, etc.) and replacement membrane equipment.
- Additional energy and chemical demand to operate the membrane facilities (MF and RO) and GAC.
- Zero liquid discharge facilities to further concentrate the brine reject.
- Zero liquid discharge facilities are energy/chemically intensive and they require membrane replacement every few years due to the brine reject water quality.
- An evaporation pond to handle the brine reject that has undergone further concentration by zero liquid discharge.

The advanced treatment MF/RO assumes that 100 percent of the flow is treated by MF, followed by 50 percent of the flow treated with RO. Sending a portion of flow through the RO and blending it with the balance of plant flows ensures a stable water to discharge. The RO brine reject (about 1.0 mgd) undergoes ZLD pre-treatment that further concentrates the brine reject to about 0.1-0.5 mgd. The recovery for both RO and ZLD processes is highly dependent on water quality (e.g., silicate levels).

ZLD technologies are effective at concentrating brine reject, but it comes at a substantial cost (\$17.5 per gallon per day of ZLD treatment capacity of brine reject). The zero liquid discharge estimate was similar in approach to the demonstration study by Burbano and Brandhuber (2012) for La Junta, Colorado. The ability to further concentrate brine reject was critical from a management standpoint. Although 8 different options were presented for managing brine reject in Section 4.4.2, none of them is an attractive approach for handling brine reject. ZLD provides a viable pre-treatment step that requires subsequent downstream treatment. Evaporation ponds following ZLD were used for this study. Without ZLD, the footprint would be 3-5 times greater.

Roughly 30 acres of evaporation ponds are required (25-year life-span) to handle the ZLD concentrate. This area requirement accounts for the moist climate of AWB members. However, precipitation throughout Washington is highly variable which can greatly influence evaporation

pond footprint. The approach for costing the evaporation pond was in accordance with Mickley et al. (2006) and the cost was about \$2.6 million.

Recent discussions with an industry installing evaporation ponds revealed that they will use mechanical evaporators to enhance evaporation rates. The use of mechanical evaporators was not included in this study, but merits consideration if a facility is performing a preliminary design that involves evaporation ponds. The mechanical evaporators have both a capital costs and annual energy costs.

### **Advanced Treatment MF/GAC**

The advanced treatment MF/GAC alternative has a total present worth unit cost range of \$36 to \$78 million in per gallon per day capacity. This translates to an incremental cost increase with respect to the baseline of \$23 to \$50 million dollars on a per gallon per day of treatment capacity basis. The key differences in cost between the baseline and the advanced treatment MF/GAC are as follows:

- Larger aeration basins than the baseline to account for the longer SRT (<8 days versus >8 days).
- Additional pumping stations to pass water through the MF membrane and GAC facilities. These are based on peak flows.
- GAC facilities (equipment, contact tanks, pumping, GAC media, etc.)
- Additional energy to feed and backwash the GAC facilities.
- GAC media replacement was the largest contributor of any of the costs.
- Additional hauling and fees to regenerate GAC off-site.

The advanced treatment MF/GAC assumes that 100 percent of the flow is treated by MF, followed by 100 percent of the flow treated with GAC. The GAC technology is an established technology. The costing approach was in accordance with EPA guidelines developed in 1998.

The critical issue while costing the GAC technology is whether a GAC vendor/regeneration facility is located within the region. On-site regeneration is an established technology with a furnace.

However, there are several concerns as listed in Section 4.4.3:

- Ability to obtain an air emissions permit
- Additional equipment to operate and maintain
- Energy and air emissions to operate a furnace on-site
- Operational planning to ensure that furnace is operating 90-95 percent of the time. Otherwise, operations is constantly starting/stopping the furnace which is energy intensive and deleterious to equipment
- If not operated properly, the facility has the potential to create hazardous/toxic waste to be disposed

If located within a couple hundred miles, off-site regeneration is preferred. For this study, off-site regeneration was assumed with a 250-mile (one-way) distance to the nearest vendor that can provide virgin GAC and a regeneration facility.

## Incremental Treatment Cost

The difference in costs between the baseline and the advanced treatment alternatives is listed in Table 11. The incremental cost to retrofit the baseline facility to the advanced treatment was calculated by taking the difference between the two alternatives. These values should serve as a planning level benchmark for understanding the potential cost for retrofitting a particular facility. The incremental cost is unique to a particular facility. Several reasons for the wide range in cost in retrofitting a baseline facility to advanced treatment are summarized as follows:

- Physical plant site constraints. A particular treatment technology may or may not fit within the constrained particular plant site. A more expensive technology solution that is more compact may be required. Alternately, land acquisition may be necessary to enlarge a plant site to allow the addition of advanced treatment facilities. An example of the former is stacking treatment processes vertically to account for footprint constraints. This is an additional financial burden that would not be captured in the incremental costs presented in Table 11.
- Yard piping. Site specific conditions may prevent the most efficient layout and piping arrangement for an individual facility. This could lead to additional piping and pumping to convey the wastewater through the plant. This is an additional financial burden that would not be captured in the incremental costs presented in Table 11.
- Pumping stations. Each facility has unique hydraulic challenges that might require additional pumping stations not captured in this planning level analysis. This is an additional financial burden that would not be captured in the incremental costs presented in Table 11.

A cursory unit cost assessment was completed to evaluate how costs would compare for facilities with lower (0.5 mgd) and higher capacity (25 mgd). Capital costs were also evaluated for a 0.5 mgd and 25 mgd facility using non-linear scaling equations with scaling exponents. The unit capital cost for baseline conventional secondary treatment for 0.5 mgd and 25 mgd is approximately \$44 and \$10 per gallon per day of treatment capacity, respectively. The incremental unit costs to implement an advanced treatment retrofit for 0.5 mgd would range between \$30 to \$96 per gallon per day of treatment capacity and would be site and discharger specific. The incremental unit costs to implement an advanced treatment retrofit for 25 mgd would range between \$10 to 35 per gallon per day of treatment capacity and would be site and discharger specific. The larger flow, 25 mgd, is not as expensive on a per gallon per day of treatment capacity. This discrepancy for the 0.5 and 25 mgd cost per gallon per day of treatment capacity is attributed to economies of scale. Cost curve comparisons (potential total construction cost and total net present value) for the baseline and the two tertiary treatment options (MF/RO and MF/GAC) are shown in Figure 8 and Figure 9 between the flows of 0.5 and 25 mgd.

**Table 12. Treatment Technology Total Project Costs in 2013 Dollars for a 0.5 mgd Facility and a 25 mgd Facility**

Alternative	Total Construction Cost, 2013 dollars (\$ Million)	O&M Net Present Value, 2013 dollars (\$ Million) *	Total Net Present Value, 2013 dollars (\$ Million)	NPV Unit Cost, 2013 dollars (\$/gpd)
<b>0.5 mgd:</b>				
Baseline (Conventional Secondary Treatment)	15 - 32	0.5 - 1.1	15 - 33	31 - 66
Advanced Treatment – MF/RO **	27 - 58	3.2 - 6.8	30 - 65	60 - 130
Advanced Treatment – MF/GAC	33 - 70	5 - 10.8	38 - 81	76 - 162
Incremental Increase to Advanced Treatment MF/RO	12 - 26	2.7 - 5.7	15 - 32	30 - 64
Incremental Increase to Advanced Treatment MF/GAC	18 - 38	4.6 - 9.8	22 - 48	45 - 96
<b>25 mgd:</b>				
Baseline (Conventional Secondary Treatment)	156 - 335	25 - 54	182 - 389	7 - 16
Advanced Treatment – MF/RO **	283 - 606	157 - 336	440 - 942	18 - 38
Advanced Treatment – MF/GAC	343 - 735	252 - 541	595 - 1276	24 - 51
Incremental Increase to Advanced Treatment MF/RO	127 - 272	131 - 281	258 - 553	10 - 22
Incremental Increase to Advanced Treatment MF/GAC	187 - 401	226.9 - 486	414 - 887	17 - 35

\* Does not include the cost for labor.

\*\* Assumes zero liquid discharge for RO brine management, followed by evaporation ponds. Other options are available as listed in Section 4.4.2.

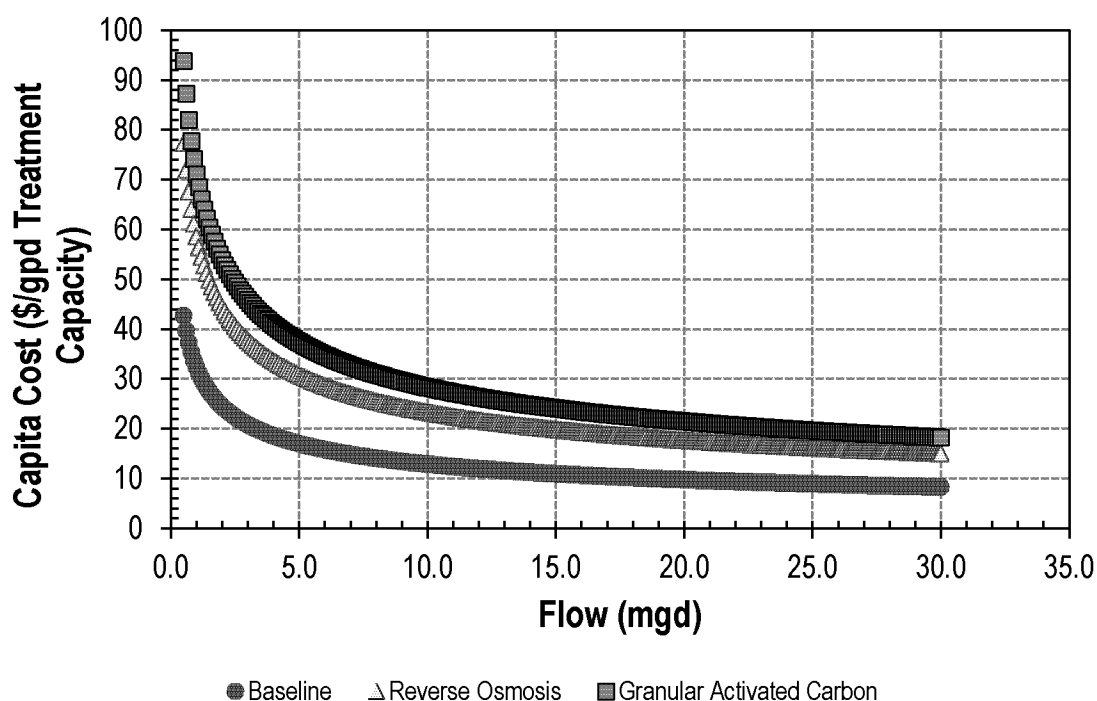


Figure 8: Capital Cost Curve Comparison for Baseline Treatment, MF/RO, and MF/GAC

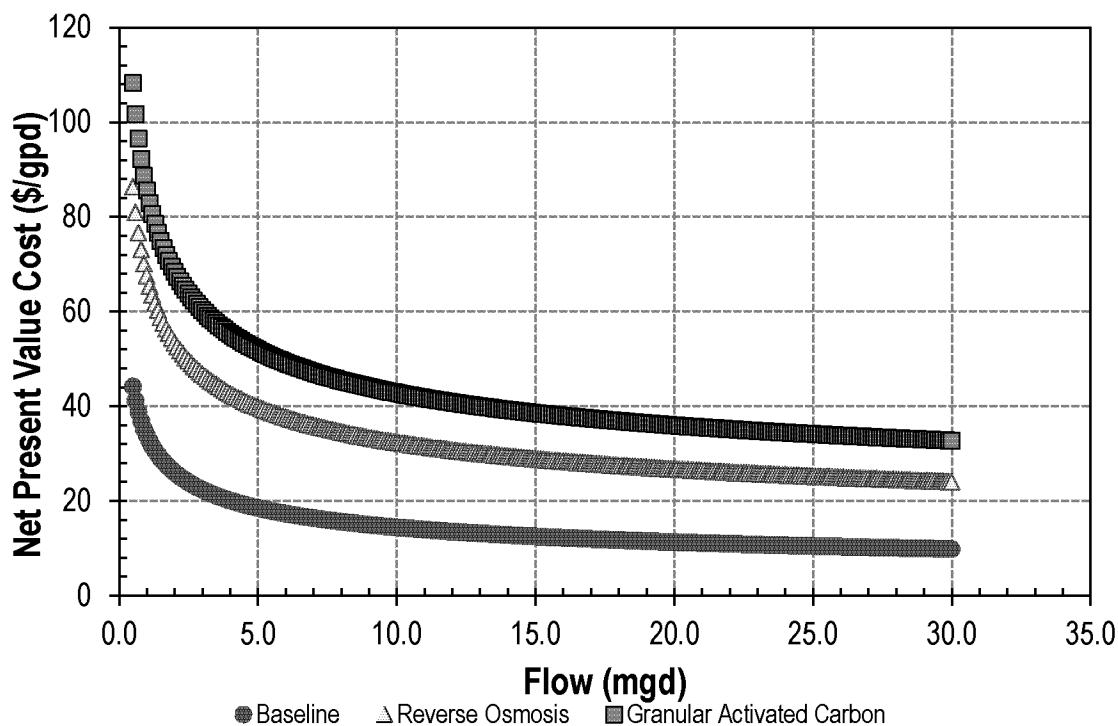


Figure 9: NPV Cost Curve Comparison for Baseline Treatment, MF/RO, and MF/GAC

## 4.8 Pollutant Mass Removal

An estimate of the projected load removal for the four constituents of concern was developed and is presented in Table 13. The current secondary effluent and advanced treatment effluent data is based on the only available data to HDR and is from municipal treatment plant facilities. Data is not available for advanced treatment facilities such as MF/RO or MF/GAC. Due to this lack of data, advanced treatment using MF/RO or MF/GAC was assumed to remove an additional zero to 90 percent of the constituents presented resulting in the range presented in Table 13. It is critical to note these estimates are based on limited data and are presented here simply for calculating mass removals. Current secondary effluent for industrial facilities would likely be greater than the data presented here and as a result, the projected effluent quality for industrial facilities would likely be higher as well. Based on the limited actual data from municipal treatment facilities, Table 13 indicates that mercury and BAP effluent limits may potentially be met using advanced treatment at facilities with similar existing secondary effluent quality.

**Table 13. Pollutant Mass Removal by Contaminant for a 5 mgd Facility**

Component	PCBs	Mercury	Arsenic	BAP
Required HHWQC based Effluent Quality (µg/L)	0.0000064	0.005	0.018	0.0013
Current Secondary Effluent Concentration (µg/L)*	0.0015	0.025	7.5	0.00031
Projected Effluent Quality (µg/L) from Advanced Treatment (MF/RO or MF/GAC)*	0.000041 – 0.00041	0.00012 – 0.0012	0.38 – 3.8	0.000029 – 0.00029
Mass Removed (mg/d)**	21 - 28	451 - 471	71,000 – 135,000	0.4 – 5.0
Mass Removed (lb/d)**	0.000045 – 0.000061	0.00099 – 0.0010	0.16 – 0.30	0.0000010 – 0.0000012

\* Based on or estimated for actual treatment plant data from municipal facilities. Data sets are limited and current secondary effluent for industrial facilities would likely be greater than the data presented here.

\*\* 1 lb = 454,000 mg

Unit costs were developed based on required mass removal from a 5 mgd facility for each of the four constituents of concern to reduce discharges from current secondary effluent quality to the assumed required effluent quality (HHWQC). It is important to note that this study concludes it is unclear if existing technology can meet the required effluent quality, however, the information presented in Table 14 assumes HHWQC would be met for developing unit costs. The unit costs are expressed as dollars in NPV (over a 25 year period) per pound of constituent removed over the same 25 year period using advanced treatment with MF/RO. The current secondary effluent quality data presented are based on typical secondary effluent quality expected for a municipal/industrial discharger. Table 14 suggests unit costs are most significant in meeting the PCB, mercury, and PAH required effluent quality.

**Table 14. Unit Cost by Contaminant for a 5 mgd Facility Implementing Advanced Treatment using MF/RO**

Component	PCBs	Mercury	Arsenic	PAHs
Required HHWQC based Effluent Quality (µg/L)	0.0000064	0.005	0.018	0.0013
Current Secondary Effluent Concentration (µg/L)*	0.002	0.025	7.5	0.006
Total Mass Removed (lbs) over 25 year Period	0.76	7.6	2,800	1.8
Unit Cost (NPV per total mass removed in pounds over 25 years)	\$290,000,000	\$29,000,000	\$77,000	\$120,000,000

\*Derived from data presented in Table 3.

\*\*Based on assumed 25-year NPV of \$219,000,000 (average of the range presented in Table 10) and advanced treatment using MF/RO.

## 4.9 Sensitivity Analysis

The ability of dischargers to meet a HHWQC one order of magnitude less stringent (than HHWQC presented in Table 3 and used in this report) was considered. The same advanced treatment technologies using MF/RO or MF/GAC would still be applied to meet revised effluent quality one order-of-magnitude less stringent despite still not being able to meet less stringent effluent limits. As a result, this less stringent effluent quality would not impact costs. Based on available data, it appears the mercury and PAH limits would be met at a less stringent HHWQC. PCB effluent quality could potentially be met if advanced treatment with RO or GAC performed at the upper range of their projected treatment efficiency. It does not appear the less stringent arsenic HHWQC would be met with advanced treatment. It is important to note that a discharger's ability to meet these less stringent limits depends on existing secondary effluent characteristics and is facility specific. Facilities with higher secondary effluent constituent concentrations will have greater difficulty meeting HHWQC.

## 5.0 Summary and Conclusions

This study evaluated treatment technologies potentially capable of meeting revised effluent discharge limits associated with revised HHWQC. HDR completed a literature review of potential technologies and engineering review of their capabilities to evaluate and screen treatment methods for meeting revised effluent limits for four constituents of concern: arsenic, BAP, mercury, and PCBs. HDR selected two alternatives to compare against a baseline, including enhanced secondary treatment, enhanced secondary treatment with MF/RO, and enhanced secondary treatment with MF/GAC. HDR developed capital costs, operating costs, and a NPV for each alternative, including the incremental cost to implement from an existing secondary treatment facility.

The following conclusions can be made from this study.

- Revised HHWQC based on state of Oregon HHWQC (2001) and EPA “National Recommended Water Quality Criteria” will result in very low water quality criteria for toxic constituents.
- There are limited “proven” technologies available for dischargers to meet required effluent quality limits that would be derived from revised HHWQC.
  - Current secondary wastewater treatment facilities provide high degrees of removal for toxic constituents; however, they will not be capable of compliance with water quality-based NPDES permit effluent limits derived from revised HHWQC.
  - Advanced treatment technologies have been investigated and candidate process trains have been conceptualized for toxics removal.
    - Advanced wastewater treatment technologies may enhance toxics removal rates, however they will not be capable of compliance with HHWQC based effluent limits for PCBs. The lowest levels achieved based on the literature review were between  $<0.00001$  and  $0.00004 \mu\text{g/L}$ , as compared to a HHWQC of  $0.0000064 \mu\text{g/L}$ .
    - Based on very limited performance data for arsenic and mercury from advanced treatment information available in the technical literature, compliance with revised criteria may or may not be possible, depending upon site specific circumstances.
      - Compliance with a HHWQC for arsenic of  $0.018 \mu\text{g/L}$  appears unlikely. Most treatment technology performance information available in the literature is based on drinking water treatment applications targeting a much higher SDWA MCL of  $10 \mu\text{g/L}$ .
      - Compliance with a HHWQC for mercury of  $0.005 \mu\text{g/L}$  appears to be potentially attainable on an average basis but perhaps not if effluent limits are structured on a maximum monthly, weekly or daily basis. Some secondary treatment facilities attain average effluent mercury levels of  $0.009$  to  $0.066 \mu\text{g/L}$ . Some treatment facilities with effluent filters attain average effluent mercury levels of  $0.002$  to  $0.010 \mu\text{g/L}$ . Additional advanced treatment processes are expected to enhance these removal rates, but little mercury performance data is available for a definitive assessment.



- Little information is available to assess the potential for advanced technologies to comply with revised benzo(a)pyrene criteria.
- Some technologies may be effective at treating identified constituents of concern to meet revised limits while others may not. It is therefore even more challenging to identify a technology that can meet all constituent limits simultaneously.
- A HHWQC that is one order-of-magnitude less stringent could likely be met for mercury and PAHs however it appears PCB and arsenic limits would not be met.
- Advanced treatment processes incur significant capital and operating costs.
  - Advanced treatment process to remove additional arsenic, benzo(a)pyrene, mercury, and PCBs would combine enhancements to secondary treatment with microfiltration membranes, reverse osmosis, and granular activated carbon and increase the estimated capital cost of treatment from \$17 to \$29 in dollars per gallon per day of capacity (based on a 5.0 mgd facility).
  - The annual operation and maintenance costs for the advanced treatment process train will be substantially higher (approximately \$5 million - \$15 million increase for a 5.0 mgd capacity facility) than the current secondary treatment level.
- Implementation of additional treatment will result in additional collateral impacts.
  - High energy consumption.
  - Increased greenhouse gas emissions.
  - Increase in solids production from chemical addition to the primaries. Additionally, the membrane and GAC facilities will capture more solids that require handling.
- It appears advanced treatment technology alone cannot meet all revised water quality limits and implementation tools are necessary for discharger compliance.
  - Implementation flexibility will be necessary to reconcile the difference between the capabilities of treatment processes and the potential for HHWQC driven water quality based effluent limits to be lower than attainable with technology

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## 7.0 Appendices

- Appendix A - Unit Process Sizing Criteria
- Appendix B - Greenhouse Gas Emissions Calculation Assumptions

## APPENDIX A - UNIT PROCESS SIZING CRITERIA

**Table A-1. Unit Processes Sizing Criteria for Each Alternative**

Unit Process	Units	Baseline Treatment	Advanced Treatment	Comment
Influent Pumping Station	unitless	3 Times Ave Flow	3 Times Ave Flow	This is peaking factor used to size the pumps (peak flow:average flow)
Alum Dose for CEPT (optional)	mg/L	20	20	This is the metal salt upstream of the primaries
Primary Clarifiers	gpd/sf	1000	1000	This is for average annual flows
Primary Solids Pumping Station	unitless	1.25 Times Ave Flow	1.25 Times Ave Flow	This is peaking factor used to size the pumps (maximum month flow:average flow)
Aeration System Oxygen Uptake Rate (OUR)	mg/L/hr	25	25	Average annual OUR is used in tandem with mixed liquor to determine the required aeration basin volume (the limiting parameter governs the activated sludge basin volume)
Aeration Basin Mixed Liquor	mg/L	1250	2500	Average annual mixed liquor is used in tandem with OUR (see next row) to determine the required aeration basin volume (the limiting parameter governs the activated sludge basin volume)
Secondary Clarifiers Hydraulic Loading	gpd/sf	650	--	Only use for Baseline as clarifiers governed hydraulically with short SRT (<2 days)
Secondary Clarifiers Solids Loading	lb/d/sf	--	24	Only use for Advanced Treatment as clarifiers governed by solids with long SRT (>8 days)
Return Activated Sludge (RAS) Pumping Station	unitless	1.25 Times Ave Flow	1.25 Times Ave Flow	RAS must have capacity to meet 100% influent max month Flow. The influent flow is multiplied by this peaking factor to determine RAS pumping station capacity.
Waste Activated Sludge (WAS) Pumping Station	gpm	1.25 Times Ave Flow	1.25 Times Ave Flow	WAS must have capacity to meet max month WAS flows. The average annual WAS flow is multiplied by this peaking factor to determine WAS pumping station capacity.
Microfiltration (MF) Flux	gfd	--	25	Based on average annual pilot experience in Coeur D'Alene, ID
MF Backwash Storage Tank	unitless	--	1.25	Storage tanks must have capacity to meet maximum month MF backwash flows. The average annual MF backwash volume is multiplied by this peaking factor to determine required volume.

Table A-1. Unit Processes Sizing Criteria for Each Alternative

Unit Process	Units	Baseline Treatment	Advanced Treatment	Comment
MF Backwash Pumps	unitless	--	1.25	Backwash pumps must have capacity to meet maximum month MF backwash flows. The average annual MF backwash flow is multiplied by this peaking factor to determine required flows.
Reverse Osmosis (RO)	gallon per square foot per day (gfd)	--	10	
RO Reject	%	--	20	This represents the percentage of feed flow that is rejected as brine
Chlorination Dose	mg/L	15	15	
Chlorination Storage Capacity	days	14	14	
Chlorine Contact Tank	min	30	30	This is for average annual conditions.
Dechlorination Dose	mg/L	15	15	
Dechlorination Storage Capacity	days	14	14	
Gravity Belt Thickener	gpm/m	200	200	This is for maximum month conditions using the 1.25 peaking factor from average annual to maximum month
Anaerobic Digestion	Hydraulic residence time (HRT)	18	18	This is for average annual conditions
Dewatering Centrifuge	gpm	120	120	This is for maximum month conditions using the 1.25 peaking factor from average annual to maximum month

gpd=gallons per day; sf=square feet; gpm=gallons per minute

## Appendix B – Greenhouse Gas Emissions Calculation Assumptions

The steady state mass balance results were used to calculate GHG emissions. The assumptions used to convert between energy demand, chemical demand and production, as well as biologically-mediated gases (i.e., CH<sub>4</sub> and N<sub>2</sub>O) and GHG emissions are provided in Table B-1. The assumptions are based on EPA (2007) values for energy production, an adaptation of the database provided in Ahn et al. (2010) for N<sub>2</sub>O emissions contribution, Intergovernmental Panel on Climate Change (IPCC) (2006) for fugitive CH<sub>4</sub> emissions, and various resources for chemical production and hauling from production to the wastewater treatment plant (WWTP). Additionally, the biogas produced during anaerobic digestion that is used as a fuel source is converted to energy with MOP8 (2009) recommended waste-to-energy values.

**Table B-1. Greenhouse Gas Emissions Assumptions**

Parameters	Units	Value	Source
N <sub>2</sub> O to CO <sub>2</sub> Conversion	lb CO <sub>2</sub> /lb N <sub>2</sub> O	296	IPCC, 2006
CH <sub>4</sub> to CO <sub>2</sub> Conversion	lb CO <sub>2</sub> /lb CH <sub>4</sub>	23	IPCC, 2006
Energy Production			
CO <sub>2</sub>	lb CO <sub>2</sub> /MWh	1,329	USEPA (2007)
N <sub>2</sub> O	lb N <sub>2</sub> O/GWh	20.6	USEPA (2007)
CH <sub>4</sub>	lb CO <sub>2</sub> /GWh	27.3	USEPA (2007)
Sum Energy Production	lb CO <sub>2</sub> /MWh	1336	USEPA (2007)
GHGs per BTU Natural Gas			
CO <sub>2</sub>	lb CO <sub>2</sub> /MMBTU Natural Gas	52.9	CA Climate Action Registry Reporting Tool
N <sub>2</sub> O	lb N <sub>2</sub> O/MMBTU Natural Gas	0.0001	CA Climate Action Registry Reporting Tool
CH <sub>4</sub>	lb CO <sub>2</sub> /MMBTU Natural Gas	0.0059	CA Climate Action Registry Reporting Tool
Sum Natural Gas		53.1	CA Climate Action Registry Reporting Tool
Non-BNR N <sub>2</sub> O Emissions	g N <sub>2</sub> O/PE/yr	32	Ahn et al. (2010)
BNR N <sub>2</sub> O Emissions	g N <sub>2</sub> O/PE/yr	30	Ahn et al. (2010)
Biogas Purity	% Methane	65	WEF, 2009
Biogas to Energy	BTU/cf CH <sub>4</sub>	550	WEF, 2009
Digester Gas to Electrical Energy Transfer Efficiency	%	32	HDR Data



**Table B-1. Greenhouse Gas Emissions Assumptions**

Parameters	Units	Value	Source
Chemical Production			
Alum	lb CO <sub>2</sub> /lb Alum	0.28	SimaPro 6.0 - BUWAL250, Eco-indicator 95
Polymer	lb CO <sub>2</sub> /lb Polymer	1.18	Owen (1982)
Sodium Hypochlorite	lb CO <sub>2</sub> /lb Sodium Hypochlorite	1.07	Owen (1982)
Building Energy Efficiency	kBTU/sf/yr	60	Calif. Commercial End-Use Survey (2006)
Hauling Distance		-	
Local	miles	100	-
Hauling Emissions			
Fuel Efficiency	miles per gallon	8	
CO <sub>2</sub>	kg CO <sub>2</sub> /gal diesel	10.2	CA Climate Action Registry Reporting Tool
N <sub>2</sub> O	kg N <sub>2</sub> O/gal diesel	0.0001	CA Climate Action Registry Reporting Tool
CH <sub>4</sub>	kg CH <sub>4</sub> /gal diesel	0.003	CA Climate Action Registry Reporting Tool
Sum Hauling Fuel	kg CO <sub>2</sub> /gal diesel	10.2	CA Climate Action Registry Reporting Tool

GWh = Giga Watt Hours  
 MWh = Mega Watt Hours  
 MMBTU = Million British Thermal Units  
 BTU = British Thermal Unit  
 PE = Population Equivalents  
 kBTU/sf/yr = 1,000 British Thermal Units per Square Foot per Year  
 cf = cubic feet  
 lb = pound  
 kg = kilogram  
 gal = gallon

**From:** Schwartz, Jerry [Jerry\_Schwartz@afandpa.org]  
**Sent:** 8/25/2017 5:51:29 PM  
**To:** Fotouhi, David [fotouhi.david@epa.gov]; Schwab, Justin [schwab.justin@epa.gov]  
**CC:** Noe, Paul [Paul\_Noel@afandpa.org]; James Tupper [tupper@tmw-law.com]  
**Subject:** FW: Follow Up Material from Yesterday's Meeting  
**Attachments:** HDR Cost Report Aug 08[1] copy.pdf; HDR Press Release 12.5.13[2].docx; AWB - HDR Toxics Technology Report - Final 11-7-2013[2] copy.pdf; Larry Walker WQBudgetLegReport2016.pdf; AFPA Meeting with EPA on HHWQC.pptx

Dear David and Justin,

Thank you for taking the time to meet with us yesterday and for assembling the team working on this issue. As I didn't catch the names of all those attending, I am sending this to you; I assume that you can distribute it as needed.

Just so you know, this is the same information we sent to Lee to respond to his request for additional information after our meeting with him (except for the PowerPoint). It includes issues that were not part of your request, but we thought you would find it helpful, nonetheless.

We do not have data on the drop off in permits issued in Oregon after the adoption of the HHWQC in that state. We will continue looking, but in the meantime EPA's Office of Water permits group may have the data.

- I. Costs for Compliance with Maine Human Health Water Quality Criteria (HHWQC). You are correct that Maine dischargers did not conduct their own cost study, as was the case in WA and OR (discussed below). However, we note that the EPA cost study for Maine HHWQC compliance was extremely limited in terms of the pollutants for which cost estimates were derived. For example, the study did not consider PCB compliance costs at all and the only pollutant examined for the relevant pulp and paper mill was mercury (EPA assumed virtually no compliance costs for the mill, assuming it would only have to undertake a pollutant minimization plan). We think it is likely that dischargers could exceed permit limits for other pollutants based on the more stringent HHWQC included in the final EPA federal rule. Moreover, we note that other aspects of the federal rule for Maine (e.g., bacteria criteria) would impose costs on dischargers.
- II. Cost study in OR: The attached "August 08" file documents costs for pulp and paper mill compliance with the Oregon HHWQC. Note that we have focused our discussion on costs for PCBs, as that is the pollutant that is largely responsible for the significant costs we have documented. We should make clear, however, that PCBs are NOT an issue unique to the pulp and paper industry. The industry doesn't use PCBs in the manufacturing process, but they enter the process from outside sources (wood, water, recovered paper, etc.) because of ubiquitous legacy contamination. Essentially, all ambient waters in the U.S. will exceed the federal Washington rule criterion of 7 parts per quadrillion (ppq) using Method 1668, and this level is not achievable in any effluent/runoff from any source. Indeed, even many laboratory blanks contain PCBs above that level.

Here is the key point from the summary of the study on page 3:

Costs [in the table on page 3] provided above represent only four of the eight large mills located in Oregon. The cost related to simply installing technology to meet revised HHWQC at increased FCRs is significant and *would cost the Oregon pulp and paper industry in excess of \$500 million.* In addition, *annual costs to operate these technologies would cost Oregon pulp and paper mills in the range of \$30 to \$90 million annually.* (Emphasis added).

- III. Cost Study in WA: In December 2013, a broad-based coalition of industry and local government entities issued a new HDR report, based on the same methodology as the OR report, documenting

their members' compliance costs with the *state's* proposed HHWQC (see attached AWB report and press release). Importantly, those criteria were less stringent than the final EPA federal criteria and thus compliance costs for the EPA final rule would be *even greater* than those outlined in the HDR evaluation. Table 1 on page ES-3 provides the cost estimate in the billions of dollars for various treatment technologies, but as we stated, even those expenditures would not guarantee compliance.

Note that in contrast, the EPA cost analysis projected virtually no compliance costs on the assumption that dischargers would simply obtain variances or compliance schedules. This is an unfounded assumption as those implementation tools are costly and difficult to obtain (as you heard from the Wisconsin example), and only delay the inevitable cost expenditure, as compliance is required at the termination of the variance or compliance schedule. Furthermore, variances, extended compliance schedules and other unproven implementation tools leave municipal and industrial permittees and state agencies open to costly and resource-intensive litigation.

- IV. Permitting Status in OR: We can state unequivocally that the industry is not “living with” the OR criteria. No pulp and paper mill NPDES permits have been issued based on the OR HHWQC and we believe that is the case for all major dischargers in the state. Indeed, NPDES permitting in OR has slowed considerably and caused significant backlogs for a variety of reasons, including the HHWQC. This prompted the legislature to require the state environmental agency to commission a study to examine the problem. That report (see “Larry Walker...” file attached) found a variety of problems contributed to the backlog, including, “[t]he difficulty for some dischargers to meet water quality standards, requiring complex regulatory solutions and/or expensive engineering.” (Report, page 2).

An earlier draft of the Walker report included an even more direct statement regarding permitting status that we believe better reflects the current permitting status in Oregon:

“A number of the stakeholders indicate the adoption of new water quality standards or changes to existing standards as a result of either litigation or EPA disapprovals has had an ongoing disruptive effect on the renewal of wastewater NPDES permits in Oregon. These events, and, in some cases, the absence of an effective response to these events in terms of direction to NPDES permit writers, has contributed to significant delays in NPDES permitting, and increased NPDES permit backlog. After analysis it became clear that, despite the recognition of this problem, effective strategies or processes are not in place to deal with the long term effect of current and future water quality standards, 303-d listings and resulting TMDL wasteload allocations on the NPDES permitting program.

In addition, indications that the NPDES permitting process is not consistently aligned with EPA and DEQ legal requirements are illustrated in a recent document and in feedback received from various stakeholders. Failure to address such deficiencies affects the NPDES permit renewal backlog, as rework is required to meet legal requirements while an NPDES permit remains incomplete.”

- V. Risk Slides (discussed individually)
- a. Risk Comparison (slide 8): This slide compares various risks of dying versus the hypothetical risk of contracting cancer under several EPA policies and rules. The key point for Washington is that by overriding the 2000 Methodology and protecting high consuming tribes at the  $10^{-6}$  risk level, the criteria protect the general population of Washington at  $10^{-8}$ —resulting in incredibly stringent, expensive, and unachievable permit limits. Moreover, those risks are much more remote than those in other EPA rules and programs, and those of other agencies.
  - b. Compounded Conservatism/EPA HHWQC Exposure Assumptions (slide 6): The slide demonstrates the extremely conservative nature of the national HHWQC. The equation deriving the criteria assumes everyone has ALL of the characteristics in the second column in the slide. It is not likely that anyone has all these characteristics, yet this is the basis for the

national HHWQC. The WA and ME criteria are even more conservative, assuming higher fish consumption rates.

- c. Risk Choices (slide 7): This slide demonstrates there is no measurable human health benefit of insisting on protecting the tribes at a  $10^{-6}$  risk level, as the EPA now requires. Because the risk levels look at excess risk over the baseline, the theoretical risks of cancer from implementation of HHWQC based on various risk levels differ by decimal points, and are certainly not measurable. Yet, as discussed, these risk level decisions have a dramatic impact on the cost of compliance for both state agencies and permitted industrial and municipal sources.

**KEY POINT:** We understand that tribal treaty rights raise complicated legal issues. The Washington petition we filed and the Maine amended complaint provide well-reasoned arguments why those treaties don't require EPA's new policies that override cooperative federalism, and reject state HHWQC.

Even if one believes that those treaties do require special protection of tribal treaty rights (which we don't), there is no basis for EPA to determine that this requires the EPA-mandated HHWQC (including setting a  $10^{-6}$  risk level for high consuming subpopulations such as the tribes) to protect those rights. As these slides demonstrate, the national HHWQC are incredibly protective as they are based on extremely conservative assumptions. Further, there is no measurable benefit from criteria based on the different risk levels depicted. Finally, our WA petition for reconsideration demonstrates that EPA has always viewed risks resulting from criteria set at  $10^{-6}$ ,  $10^{-5}$  and  $10^{-4}$  to be de minimis, and a new policy determining that only a  $10^{-6}$  risk level is protective would be a radical change in policy with implications for other risk programs in EPA and in other agencies.

- VI. Additional Reading: Finally, here is a link to a blog and an article I wrote that was published in BNA Bloomberg. It is based on a lot of work by NCASI and others. It is rather lengthy, but it provides a (hopefully) easy to understand explanation of the issues involved.

Thanks again for your time yesterday, and we would be happy to provide any additional information. Jerry

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American  
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## *AF&PA/EPA Meeting on Human Health Water Quality Criteria*



BETTER PRACTICES  
BETTER PLANET 2020  
FOR THE PAPER & FOREST INDUSTRY

## ***Introduction – General Concerns***

- Use of treaty rights claims to change CWA requirements
- Major change in risk policy, with potential impacts for other programs and agencies.
- Use of new “suppression effect” theory to radically increase fish consumption levels used to calculate standards; much more stringent and expensive permit limits.
- Washington rule could cost over \$1B, with no measurable benefits. OIRA should request that EPA submit the rule for review.
- Washington rule is less stringent than Maine rule, because the Washington rule is based on a Fish Consumption Rate of 175 g/d v. 286 g/d for Maine.

## *Legal Issues*

- EPA does not have authority to go beyond CWA, irrespective of tribal treaty rights.  
*NAHB; AF&PA*
- Creating a new designated use—not allowed under CWA, EPA regulations, Maine law
- Major change from existing policy (2000 Methodology)—violates APA

## Policy Issue: Risk Levels

- 2000 Methodology (and NTR, GLI)—State discretion
  - General population:  $10^{-5}$  or  $10^{-6}$ , as long as subpopulation at  $10^{-4}$
- Policy Rationale
  - “Given the wide variations in consumption patterns, it would *not seem to be possible for States and Tribes to provide the same level of protection* from contaminated fish for all consumers.” 63 Fed. Reg. 36,742, 36,775 (July 7, 1998). Methodology states, “[t]he point is that the *risks for different population groups are not the same.*” Methodology at 2-7 (emphasis added)
  - $10^{-6}$  is **not the only protective risk level** for high consumers
    - Methodology:  $10^{-6}$ ,  $10^{-5}$ , and  $10^{-4}$  for high consumers are all *de minimis* risk
    - Long-standing EPA risk policy
    - Precedent for other EPA programs and agencies.



# HHWQC Criteria: Three Elements

## HHWQC =

### Health Protection Target

- excess cancer risk  
or
- hazard quotient

### Substance Toxicity

- risk specific dose  
or
- reference dose

### Exposure Scenario

- body weight
- AND**
- drinking water intake
- AND**
- fish consumption rate
- AND**
- biological accumulation
- AND**
- water column concentration
- AND**
- cooking loss
- AND**
- duration of exposure
- AND**
- other exposures

Source: NCASI

Human health water quality criteria (HHWQC) are derived using three components: a health protection target; a toxicity value for the substance, and; an exposure scenario. The exposure scenario contains both explicit parameters (i.e., those that are visible in the criteria derivation equation) and implicit parameters (i.e., assumptions that influence the calculated criteria but do not appear in the published equation). EPA has recently encouraged states to alter past practices with respect to the fish consumption rate and "other exposures" (i.e., relative source contribution, or RSC) values used in the criteria derivation equation.

# EPA HHWQC Exposure Assumptions

Everyone has all of the following characteristics:

Parameter	National Default Value	Proposal for Washington	Proposal for Maine (Indian Lands)
Weights...	80kg (176 lbs)	Same	Same
Every Day for 70 Years Drinks Water From the Same Location That is...	•2.4 L/day (2.5 quarts):  •Unfiltered and Untreated <u>and</u>  •From Surface Water (lakes, streams, etc.) <u>and</u>  •Contaminated at the HHWQC Level	Same	Same
<u>AND</u>  Every Day for 70 Years Consumes Fish From the Same Location That Is ...	•22 g/day (.8 oz):  •From Local Waters, Grocery Stores, Aquaculture, Foreign Countries (excluding marine) <u>and</u>  •From Waters Contaminated at the HHWQC Level <u>and</u>  •Contaminated with Pollutants from the Water to the Maximum Extent Possible <u>and</u>  •Contaminated with the Same Amount of Pollutants Despite Reductions from Cooking	175 g/d (.39 lbs)  All Other Assumptions Are The Same	286 g/d (.63 lbs)  (the rate that is unsuppressed by concerns about the safety of available fish)  All Other Assumptions Are The Same

# Risk Choices

## Impact of EPA Choosing $10^{-6}$ v. $10^{-5}$ v. $10^{-4}$ Excess Lifetime Cancer Risk Level

" $10^{-6}$  means the "risk of developing cancer...would be one in a million on top of the background risk of developing cancer from all other exposures."  
(emphasis added)\*

**If Everyone** has **ALL** of the Equation Characteristics:

Background Risk of Developing Cancer	Theoretical Risk with $10^{-4}$	Theoretical Risk with $10^{-5}$	Theoretical Risk with $10^{-6}$
4 in 10, or .40000	.4001	.40001	.400001

\* EPA Proposed Criteria for Maine, 81 *Fed. Reg.* 23243 (4/20/16)

# Risk Comparison

Comparison of Risks of Dying to Regulatory Allowable Risk Levels								
Risk Level	Risk of Death	Allowable Risk (Cancer Risk)						
		EPA 2000 Methodology	Washington Water Quality	Florida Proposed Water Quality	EPA Drinking Water	EPA Superfund & State Cleanups	Federal OSHA on Workplace Standards	US FDA on Dietary Supplement Safety
1 in 10 ( $1 \times 10^{-1}$ )	Death (1 in 4)	EPA's previous risk policy						N O R E G U L A T I O N
	Heart Disease (1 in 10)							
1 in 100 ( $1 \times 10^{-2}$ )	Stroke (1 in 40)	EPA's new risk policy						
	Falls (1 in 200)							
1 in 1,000 ( $1 \times 10^{-3}$ )	Casino worker (1 in 250)							
	Acrylamide in food (1 in 1,800)							
1 in 10,000 ( $1 \times 10^{-4}$ )	Bike accident (1 in 5,000)	Sub-populations (1 in 10,000)			Arsenic (5 in 10,000)	1 in 10,000		
	Lightning (1 in 80,000)							
1 in 100,000 ( $1 \times 10^{-5}$ )	Asteroid (1 in 500,000)	1 in 100,000			EPA Drinking Water ↑ ↓	EPA Superfund Range ↑ ↓		
		General Population 1 in 1,000,000						
1 in 1,000,000 ( $1 \times 10^{-6}$ )			Sub-population (1 in 1,000,000)	Average population (1 in 1,000,000)	Benzene (1 in 10,000,000)	No action needed		
1 in 10,000,000 ( $1 \times 10^{-7}$ )			General population (1 in 20,000,000)					
1 in 100,000,000 ( $1 \times 10^{-8}$ )								

## *Impacts for Other Programs and Agencies*

- Superfund
  - ARARs
  - NCP: “For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between  $10^{-4}$  and  $10^{-6}$  using information on the relationship between dose and response.”
- CAA:
  - MATS cites tribal treaty rights

## *Tribal Consumers as Target Population*

- New policy to protect tribal consumers as the target population
  - Contrary to 2000 Methodology, and has not been properly adopted as policy change under APA
  - The existing methodology to protect general population already provides sufficient protection of high consumers
  - Targets the general population at levels of  $10^{-7}$  or lower, depending on the exact assumptions used to represent the tribe.

## ***“Unsuppressed” FCR of 286 Grams/Day***

- New policy to base FCR on high consumers, instead of general population;
  - Not needed to be protective
  - Violates APA
- To protect the designated use, the FCR must represent “sustenance level of consumption unsuppressed by pollutant concerns.”
  - “Scientific and policy judgment” is “necessary and appropriate”
  - Based on an FAQ document. 81 FR 23245.
  - Wabanki study : “describe the lifestyle that was universal when resources were in better condition and that some tribal members practice today (and many more that are waiting to resume once restoration goals and protective standards are in place.)” 81 FR 23245 (emphasis added)

## ***“Unsuppressed” FCR of 286 Grams/Day***

- 1991 Maine licensed anglers study
  - 95% of anglers consumed 26 g/d or less. Virtually no fish advisories, so it is an “unsuppressed rate” (no fear of contamination)
  - 148 Native Americans included in survey. 95<sup>th</sup> percentile was 51 g/d. Max was 182 g/d. But only 6% consumed > than Maine FCR of 32.4 g/d.
- Subsistence lifestyle no longer necessary for survival in Maine
- Tribal members not likely “waiting to resume” the traditional lifestyle. Studies show when commercial food is available, tribal members consumption patterns evolve.



## Legal/Policy Issues: CWA and EPA Regulations

- States are the primary authority to set criteria under the CWA
- State criteria must protect the designated use and be based on “sound scientific rationale”(40 C.F.R. § 131.11(a))
- State criteria can deviate from federal criteria (40 C.F.R. § 131.11(b))
  - Can modify to reflect “site-specific conditions “
  - Can use “other scientifically defensible methods”
- State criteria can vary from EPA guidance or recommendations and still be scientifically defensible and protective, particularly in light of the conservative nature of criteria derivation and EPA’s own recognition that risks at  $10^{-6}$ ,  $10^{-5}$ , or  $10^{-4}$  are *de minimis*
- State criteria that are scientifically defensible comply with the Act and EPA regulations, and must be approved by EPA, even if they are not consistent with EPA recommendations, guidance or policy.
- Called for by the CWA—Cooperative federalism



# ***Wastewater Treatment Technology Review For WA State Standards***

- **Even if standards were an order of magnitude less stringent (10x), and if advanced treatment technology were economically feasible, standards could not be met for PCB's and arsenic with available technology.**
- **Conclusion: EPA's proposed WQS for WA are neither technically nor economically feasible.**
- **Source: HDR Engineering, Inc. Report**

# Anticipated Costs to Address EPA PCB Criterion

Table 10. Treatment Technology Total Project Costs in 2013 Dollars for a 0.5 mgd Facility and a 25 mgd Facility

Alternative	Total Construction Cost, 2013 dollars (\$ Million)	O&M Net Present Value, 2013 dollars (\$ Million)*	Total Net Present Value, 2013 dollars (\$ Million)	NPV Unit Cost, 2013 dollars (\$/gpd)
<b>0.5 mgd:</b>				
Baseline (Conventional Secondary Treatment)	15 - 32	0.5 - 1.1	15 - 33	31 - 66
Advanced Treatment – MF/RO**	27 - 58	3.2 - 6.8	30 - 65	60 - 130
Advanced Treatment – MF/GAC	33 - 70	5 - 10.0	38 - 81	76 - 162
Incremental Increase to Advanced Treatment MF/RO	12 - 26	2.7 - 5.7	15 - 32	30 - 64
Incremental Increase to Advanced Treatment MF/GAC	18 - 36	4.6 - 9.8	22 - 48	45 - 96
<b>25 mgd:</b>				
Baseline (Conventional Secondary Treatment)	166 - 335	25 - 54	182 - 389	7 - 16
Advanced Treatment – MF/RO**	283 - 606	157 - 336	440 - 942	18 - 38
Advanced Treatment – MF/GAC	343 - 735	252 - 541	595 - 1276	24 - 51
Incremental Increase to Advanced Treatment MF/RO	127 - 272	131 - 281	258 - 553	10 - 22
Incremental Increase to Advanced Treatment MF/GAC	167 - 401	226.9 - 486	414 - 887	17 - 35

\* Does not include the cost for labor.

\*\* Assumes zero liquid discharge for RO brine management, followed by evaporation ponds. Other options are available as listed in Section 4.4.2.

MF/RO=membrane filtration/reverse osmosis

MF/GAC=membrane filtration/granulated activated carbon

O&M=operations and maintenance cost/dollars per day

Message

---

**From:** Schwartz, Jerry [Jerry\_Schwartz@afandpa.org]  
**Sent:** 10/30/2017 5:37:37 PM  
**To:** Fotouhi, David [Fotouhi.David@epa.gov]  
**Subject:** Additional Material  
**Attachments:** HDR Cost Report Aug 08[1] copy.pdf; HDR Press Release 12.5.13[2].docx; AWB - HDR Toxics Technology Report - Final 11-7-2013[2] copy.pdf; Larry Walker WQBudgetLegReport2016.pdf; Follow up Slides for Forsgren meeting.pptx

Here is the additional material previously sent to Lee. Item V discusses the inherently conservative nature of the HHWQC.

---

**From:** Schwartz, Jerry  
**Sent:** Wednesday, July 26, 2017 5:40 PM  
**To:** 'Forsgren, Lee' <Forsgren.Lee@epa.gov>; Macara Lousberg (lousberg.macara@epa.gov) <lousberg.macara@epa.gov>  
**Cc:** Noe, Paul <Paul\_No@afandpa.org>; 'Garber, Rich D' <RichGarber@packagingcorp.com>; 'Roberto A. Artiga' (roberto.artiga@kapstonepaper.com)' <roberto.artiga@kapstonepaper.com>; 'Mayes Starke' (mayes.starke@gapac.com)' <mayes.starke@gapac.com>; 'Reitter, Annabeth' <Annabeth.Reitter@domtar.com>; 'Wiegand, Paul' <pwiegand@ncasi.org>  
**Subject:** Follow Up Material from Today's Meeting

Dear Lee and Macara,

Thank you for taking the time to meet with us this morning. Below and attached is the information you requested, as well as some additional information.

- I. Costs for Compliance with Maine Human Health Water Quality Criteria (HHWQC). You are correct that Maine dischargers did not conduct their own cost study, as was the case in WA and OR (discussed below). However, we note that the EPA cost study for Maine HHWQC compliance was extremely limited in terms of the pollutants for which cost estimates were derived. For example, the study did not consider PCB compliance costs at all and the only pollutant examined for the relevant pulp and paper mill was mercury (EPA assumed virtually no compliance costs for the mill, assuming it would only have to undertake a pollutant minimization plan). We think it is likely that dischargers could exceed permit limits for other pollutants based on the more stringent HHWQC included in the final EPA federal rule. Moreover, we note that other aspects of the federal rule for Maine (e.g., bacteria criteria) would impose costs on dischargers.
- II. Cost study in OR: The attached "August 08" file documents costs for pulp and paper mill compliance with the Oregon HHWQC. Note that we have focused our discussion on costs for PCBs, as that is the pollutant that is largely responsible for the significant costs we have documented. We should make clear, however, that PCBs are NOT an issue unique to the pulp and paper industry. The industry doesn't use PCBs in the manufacturing process, but they enter the process from outside sources (wood, water, recovered paper, etc.) because of ubiquitous legacy contamination. Essentially, all ambient waters in the U.S. will exceed the federal Washington rule criterion of 7 parts per quadrillion (ppq) using Method 1668, and this level is not achievable in any effluent/runoff from any source. Indeed, even many laboratory blanks contain PCBs above that level.

Here is the key point from the summary of the study on page 3:

Costs [in the table on page 3] provided above represent only four of the eight large mills located in Oregon. The cost related to simply installing technology to meet revised HHWQC at increased FCRs is significant and *would cost the Oregon pulp and paper*

*industry in excess of \$500 million. In addition, annual costs to operate these technologies would cost Oregon pulp and paper mills in the range of \$30 to \$90 million annually. (Emphasis added).*

- III. Cost Study in WA: In December 2013, a broad-based coalition of industry and local government entities issued a new HDR report, based on the same methodology as the OR report, documenting their members' compliance costs with the state's proposed HHWQC (see attached AWB report and press release). Importantly, those criteria were less stringent than the final EPA federal criteria and thus compliance costs for the EPA final rule would be *even greater* than those outlined in the HDR evaluation. Table 1 on page ES-3 provides the cost estimate in the billions of dollars for various treatment technologies, but as we stated, even those expenditures would not guarantee compliance.

Note that in contrast, the EPA cost analysis projected virtually no compliance costs on the assumption that dischargers would simply obtain variances or compliance schedules. This is an unfounded assumption as those implementation tools are costly and difficult to obtain (as you heard from the Wisconsin example), and only delay the inevitable cost expenditure, as compliance is required at the termination of the variance or compliance schedule. Furthermore, variances, extended compliance schedules and other unproven implementation tools leave municipal and industrial permittees and state agencies open to costly and resource-intensive litigation.

- IV. Permitting Status in OR: We can state unequivocally that the industry is not "living with" the OR criteria. No pulp and paper mill NPDES permits have been issued based on the OR HHWQC and we believe that is the case for all major dischargers in the state. Indeed, NPDES permitting in OR has slowed considerably and caused significant backlogs for a variety of reasons, including the HHWQC. This prompted the legislature to require the state environmental agency to commission a study to examine the problem. That report (see "Larry Walker..." file attached) found a variety of problems contributed to the backlog, including, "[t]he difficulty for some dischargers to meet water quality standards, requiring complex regulatory solutions and/or expensive engineering." (Report, page 2).

An earlier draft of the Walker report included an even more direct statement regarding permitting status that we believe better reflects the current permitting status in Oregon:

"A number of the stakeholders indicate the adoption of new water quality standards or changes to existing standards as a result of either litigation or EPA disapprovals has had an ongoing disruptive effect on the renewal of wastewater NPDES permits in Oregon. These events, and, in some cases, the absence of an effective response to these events in terms of direction to NPDES permit writers, has contributed to significant delays in NPDES permitting, and increased NPDES permit backlog. After analysis it became clear that, despite the recognition of this problem, effective strategies or processes are not in place to deal with the long term effect of current and future water quality standards, 303-d listings and resulting TMDL wasteload allocations on the NPDES permitting program.

In addition, indications that the NPDES permitting process is not consistently aligned with EPA and DEQ legal requirements are illustrated in a recent document and in feedback received from various stakeholders. Failure to address such deficiencies affects the NPDES permit renewal backlog, as rework is required to meet legal requirements while an NPDES permit remains incomplete."

- V. Risk Slides (discussed individually)

- a. Risk Comparison: This slide compares various risks of dying versus the hypothetical risk of contracting cancer under several EPA policies and rules. The key point for Washington is that by overriding the 2000 Methodology and protecting high consuming tribes at the  $10^{-6}$  risk level, the criteria protect the general population of Washington at  $10^{-8}$  — resulting in incredibly stringent, expensive, and unachievable permit limits. Moreover, those risks are much more remote than those in other EPA rules and programs, and those of other agencies.

- b. Compounded Conservatism: The slide demonstrates the extremely conservative nature of the national HHWQC. The equation deriving the criteria assumes everyone has ALL of the characteristics in the second column in the slide. It is not likely that anyone has all these characteristics, yet this is the basis for the national HHWQC. The WA and ME criteria are even more conservative, assuming higher fish consumption rates.
- c. Risk Levels: This slide demonstrates there is no measurable human health benefit of insisting on protecting the tribes at a  $10^{-6}$  risk level, as the EPA now requires. Because the risk levels look at excess risk over the baseline, the theoretical risks of cancer from implementation of HHWQC based on various risk levels differ by decimal points, and are certainly not measurable. Yet, as discussed, these risk level decisions have a dramatic impact on the cost of compliance for both state agencies and permitted industrial and municipal sources.

**KEY POINT:** We understand that tribal treaty rights raise complicated legal issues. The Washington petition we filed and the Maine amended complaint provide well-reasoned arguments why those treaties don't require EPA's new policies that override cooperative federalism, and reject state HHWQC.

Even if one believes that those treaties do require special protection of tribal treaty rights (which we don't), there is no basis for EPA to determine that this requires the EPA-mandated HHWQC (including setting a  $10^{-6}$  risk level for high consuming subpopulations such as the tribes) to protect those rights. As these slides demonstrate, the national HHWQC are incredibly protective as they are based on extremely conservative assumptions. Further, there is no measurable benefit from criteria based on the different risk levels depicted. Finally, our WA petition for reconsideration demonstrates that EPA has always viewed risks resulting from criteria set at  $10^{-6}$ ,  $10^{-5}$  and  $10^{-4}$  to be de minimis, and a new policy determining that only a  $10^{-6}$  risk level is protective would be a radical change in policy with implications for other risk programs in EPA and in other agencies.

- VI. Additional Reading: Finally, [here](#) is a link to a blog and an article I wrote that was published in BNA Bloomberg. It is based on a lot of work by NCASI and others. It is rather lengthy, but it provides a (hopefully) easy to understand explanation of the issues involved.

Thanks again for your time today, and we would be happy to provide any additional information. Jerry

**Jerry Schwartz**

Senior Director

Energy and Environmental Policy

[Jerry\\_Schwartz@afandpa.org](mailto:Jerry_Schwartz@afandpa.org)

(202) 463-2581

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1101 K Street, N.W., Suite 700

Washington, D.C. 20005



Message

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**From:** Greenwalt, Sarah [greenwalt.sarah@epa.gov]  
**Sent:** 6/23/2017 3:14:55 PM  
**To:** Schwartz, Jerry [Jerry\_Schwartz@afandpa.org]  
**CC:** Noe, Paul [Paul\_Noel@afandpa.org]; Chris McCabe [chris@nwpulpanpaper.org]; James Tupper [tupper@tmw-law.com]  
**Subject:** Re: Information We Discussed

Thank you for the follow up.

Sent from my iPad

> On Jun 22, 2017, at 4:03 PM, Schwartz, Jerry <Jerry\_Schwartz@afandpa.org> wrote:  
>  
> Dear Ms. Greenwalt:  
>  
> Thank you for taking the time to discuss the Human Health Water Quality Criteria issue with us. Below  
and attached is the information we discussed.  
>  
>  
> I. Maine:  
>  
> Contact Information for the Assistant Attorney General handling the case:  
>  
>  
> Scott Boak  
>  
> Assistant Attorney General  
>  
> Scott.Boak@maine.gov<mailto:Scott.Boak@maine.gov>  
>  
> (207) 626-8566  
>  
>  
>  
> Contact Information for the U.S. DOJ attorney handling the case:  
>  
>  
> DAVID A. CARSON  
> United States Department of Justice  
> Environment & Natural Resources Division  
> South Terrace - Suite 370  
> 999 18th Street  
> Denver, Colorado 80202  
> (303) 844-1349  
> david.a.carson@usdoj.gov<mailto:david.a.carson@usdoj.gov>  
>  
>  
> The EPA Motion for a 90-Day Stay of Proceedings is attached. I do not have the Court Order  
approving the motion, but I believe the stay expires around August 14th and there is a status conference  
shortly before the expiration of the stay. Also attached is the Maine Petition for Reconsideration,  
which includes the State's comments on the proposed federal rule, and the Second Amended Complaint, which  
includes a detailed analysis of the legal issues in the case.  
>  
>  
> II. Idaho  
>  
>  
>  
> The links below contain the documents that comprise the Idaho rulemaking package submitted to EPA for  
approval. Idaho Department of Environmental Quality Director John Tippetts is aware of this issue and  
would be the person to contact: John Tippetts, 208-373-0240; John.tippetts@deq.idaho.gov.  
>  
>  
>  
>  
>  
>



> . Cover Letter Dated December 13, 2016<<http://www.deq.idaho.gov/media/60179452/58-0102-1201-submission-letter-1216.pdf>>

> . Summary of Changes in Idaho WQS made by Rule Docket 58-0102-1201<<http://www.deq.idaho.gov/media/60179451/58-0102-1201-summary-of-changes-1216.pdf>>

> . Idaho Human Health Criteria Update Justification and Compliance with the Clean Water Act<<http://www.deq.idaho.gov/media/60179450/58-0102-1201-human-health-criteria-justification-compliance-clean-water-act-1216.pdf>>

> . Attorney General Certification of Amended Idaho Water Quality Standards, Docket No. 58-0102-1201<<http://www.deq.idaho.gov/media/60179449/58-0102-1201-attorney-general-certification-1216.pdf>>

>

>

>

> III. Florida

>

> There are ongoing judicial and administrative proceedings that make it hard to predict when EPA would be called upon to take action on a Florida rule submittal, but it is extremely unlikely that EPA would need to take any formal action this calendar year.

>

>

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>

> IV. EPA Guidance on Conducting Fish Consumption Surveys

>

>

>

> . Here<<https://www.epa.gov/fish-tech/guidance-conducting-fish-consumption-surveys>> is the link to the guidance that discusses the Washington and Maine rules and the fish consumption "suppression" issue that results in significantly increased Fish Consumption Rates.

>

>

> Please feel free to contact me if you have any questions or need additional information. Thank you.

>

>

> Jerry Schwartz

> Senior Director

> Energy and Environmental Policy

> Jerry\_Schwartz@afandpa.org<[mailto:Jerry\\_Schwartz@afandpa.org](mailto:Jerry_Schwartz@afandpa.org)>

> (202) 463-2581

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> Washington, D.C. 20005

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> [linkedin] <<http://www.linkedin.com/company/american-forest-&-paper-association>> [youtube]

> <<http://www.youtube.com/user/afandpa1>>

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> <image006.jpg>

> <EPA Motion for 90 day stay - filed 5 5 17.pdf>

> <20170227090758285.pdf>

Message

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**From:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**Sent:** 3/28/2019 2:35:29 PM  
**To:** Shaw, Hanh [Shaw.Hanh@epa.gov]  
**CC:** mgil461@ECY.WA.GOV; chbr461@ecy.wa.gov [CHBR461@ECY.WA.GOV]; Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]  
**Subject:** RE: NWEA lawsuit on Washington's toxics criteria

Thanks Hanh. This is exactly what we need.

Best regards,

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

This e-mail may be subject to public disclosure.

---

**From:** Shaw, Hanh [mailto:Shaw.Hanh@epa.gov]  
**Sent:** Wednesday, March 27, 2019 2:55 PM  
**To:** Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>  
**Cc:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>; Brown, Chad (ECY) <CHBR461@ECY.WA.GOV>; Guzzo, Lindsay <Guzzo.Lindsay@epa.gov>  
**Subject:** RE: NWEA lawsuit on Washington's toxics criteria

Hi Cheryl,

By way of background, EPA was sued in February 2017 for failing to respond to NWEA's 2013 petition requesting that EPA promulgate ALC and HHC for WA. The following June we denied the entirety of the petition and mooted the lawsuit. There is no ongoing legal obligation on EPA's part but it is conceivable that NWEA could at some future point file a legal challenge to EPA's petition denial, particularly with respect to ALC.

Attached is the EPA's petition denial response. On the HHC, we explained that EPA's November 2016 action partially approving revised state criteria and promulgating federal criteria adequately addressed the petition. We noted in the petition that the 2016 action didn't address the petition with respect to thallium, dioxin and arsenic but this was due to ongoing scientific uncertainty. With respect to ALC, we acknowledged that Ecology had not updated the criteria for a number of years but had just completed a major HHC update and needed time to address the ALC. It would be nice if we can show some progress on this front in the near future.

I hope this helps and please contact me or Lindsay if you have additional questions.

---

Hanh Shaw | Manager  
Water Quality Standards Unit  
Office of Water and Watersheds  
U.S. Environmental Protection Agency | Region 10  
P: 206-553-0171 | E: [shaw.hanh@epa.gov](mailto:shaw.hanh@epa.gov)

---

**From:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>  
**Sent:** Wednesday, March 27, 2019 11:42 AM  
**To:** Shaw, Hanh <[Shaw.Hanh@epa.gov](mailto:Shaw.Hanh@epa.gov)>  
**Cc:** [mgil461@ECY.WA.GOV](mailto:mgil461@ECY.WA.GOV); [chbr461@ecy.wa.gov](mailto:chbr461@ecy.wa.gov)  
**Subject:** NWEA lawsuit on Washington's toxics criteria

Hi Hahn.

We are putting together some information to assist with communication around the next triennial review. I am looking for information on how the 2013 NWEA lawsuit against EPA was resolved, and Chad recommended I contact you. The lawsuit addressed human health and aquatic life toxics, and the human health portion was resolved in 2016. Below is language from the NWEA website

(<https://www.northwestenvironmentaladvocates.org/newblog/places/washington/washington-water-quality-standards/> ) describing the situation:

*"In 2013, NWEA also submitted a formal petition to EPA asking for federal involvement in bringing Washington's human health toxic standards into the new century. In addition, the NWEA petition asked EPA to update Washington's aquatic life toxic standards, which Ecology has shown no interest in doing. After EPA failed to respond to the petition for over three years, NWEA took EPA to court in 2017."*

Was any settlement or other resolution reached between NWEA and EPA on the aquatic life toxics portion? If so can you please provide me with the documents, or links to web sites to access them, and, information on the status of work associated with this?

Thanks,

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

This e-mail may be subject to public disclosure.

## Appointment

---

**From:** Guzzo, Lindsay [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8643D3D6703A4886B13C5548D22307A0-GUZZO, LINDSAY]  
**Sent:** 4/5/2017 10:52:28 PM  
**To:** Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]; Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]; Gildersleeve, Melissa (ECY) [mgil461@ECY.WA.GOV]; Chung, Angela [Chung.Angela@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**CC:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]; Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]; Finch, Bryson (ECY) [bfin461@ECY.WA.GOV]; Conklin, Becca (ECY) [bcon461@ECY.WA.GOV]; Snouwaert, Elaine (ECY) [ESNO461@ECY.WA.GOV]  
**Subject:** In person meeting with EPA and Ecology  
**Location:** Lacey Room 2B-18  
**Start:** 4/28/2017 7:00:00 PM  
**End:** 4/28/2017 9:00:00 PM  
**Show Time As:** Busy

### Room 2B-18

Time set aside to meet in person and discuss work going on in WA WQS. We are looking to leave Seattle at about 10:45, and hope to make it by 12:00. If traffic is not good we will update you on our journey. I look forward to meeting everyone!

### Work involving WQS in the state of Washington:

-Temperature work (Columbia River and others)

- What is happening with the temperature TMDL litigation?
- Any update on Oregon temperature criteria BiOp RPA – Identifying cold water refugia?
- NCC workgroup for R10

-PPA – Check in on the following agreed upon activities:

- Rec Criteria development
- DO / Sediment Criteria development
- Triennial review / 5 year plan

-Human Health Criteria implementation

-Spokane Mayor discussion

-Spokane taskforce

-Water Quality Assessment Listing methodology for HHC/tissue (Matt/Chad)

-Total dissolved gas (Chad)

-Tribal TAS and updated WQS

-Progress Update on UAA work in Washington (Cheryl/Elaine)

-Variance webinars for R10 states (starting this summer)

### NWEA litigation meeting:

-Background on litigation (Angela)

-NWEA petition on toxics (Human health and aquatic life)

-Potential revisions to the Natural Conditions Criteria update

Message

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**From:** Gildersleeve, Melissa (ECY) [MGIL461@ECY.WA.GOV]  
**Sent:** 2/22/2017 7:05:01 PM  
**To:** Chung, Angela [Chung.Angela@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]; Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]  
**Subject:** RE: WA toxic criteria petition

That is a helpful update-- I had heard that there was a 4 month extension on settlement ----

---

**From:** Chung, Angela [mailto:Chung.Angela@epa.gov]  
**Sent:** Wednesday, February 22, 2017 9:23 AM  
**To:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>; Szelag, Matthew <Szelag.Matthew@epa.gov>; Guzzo, Lindsay <Guzzo.Lindsay@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Hi Melissa,

We don't have a schedule, at least not one resulting from any kind of WA settlement agreement (that's still pending and I'm not sure when we'll pick up discussions with you and NWEA again due to the transition on our end). I'm guessing what you are hearing is that, for internal workload/resource planning purposes, we've set a goal to have an EPA staff workgroup come up with some specific recommendations by the end of this calendar year, working with you, other interested states/tribes, and the Services. We've spent the last few weeks having internal conversations and will be ready to share some draft concepts with you guys and others in a few weeks. Lindsay Guzzo and Rochelle Labiosa are leading that work effort for the WQS unit. Let me know if you want to discuss further. Thanks.

Angela Chung  
Water Quality Standards Unit Manager  
U.S. Environmental Protection Agency  
1200 Sixth Ave, Suite 900, OWW 191  
Seattle, WA 98101  
Phone: 206-553-6511

---

**From:** Gildersleeve, Melissa (ECY) [mailto:MGIL461@ECY.WA.GOV]  
**Sent:** Wednesday, February 22, 2017 9:13 AM  
**To:** Szelag, Matthew <Szelag.Matthew@epa.gov>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Also-- heard that you have a timeline for the WQ standards (natural conditions and others) --- would be helpful to know what that is and when would be good time to touch base----as you know we are concerned about the draft settlement language you all had developed--specifically the fact that you will be vacating the natural condition provisions vs. remanding them (incremental allowance tied to all of this)----thanks---mg

---

**From:** Szelag, Matthew [mailto:Szelag.Matthew@epa.gov]  
**Sent:** Tuesday, February 21, 2017 5:09 PM  
**To:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Hi Melissa,

Thanks, same here. We've seen the press release but haven't been able to track down the actual petition yet. I'll share it with you when we receive it.

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

---

**From:** Gildersleeve, Melissa (ECY) [<mailto:MGIL461@ECY.WA.GOV>]  
**Sent:** Tuesday, February 21, 2017 4:02 PM  
**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>  
**Cc:** Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>  
**Subject:** RE: WA toxic criteria petition

Thanks-- hey did you get an actual copy of the AWB petition? We saw the press release but have not seen the actual petition they sent you---Attaching press release in case it did not make it to AK--

FOR IMMEDIATE RELEASE: February 21, 2017

## **EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

*Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable*

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.

"We are all committed to clean water," said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today's action. "Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders' input. The existing EPA rule fails on all these grounds."

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

"From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable," McCabe said. "We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance."

“We were extremely disappointed when EPA’s rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state’s own rule offers a more realistic and feasible approach to water quality.”

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. “The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone’s efforts to improve environmental and health outcomes for Washington residents,” she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA’s new standards. This could put facility operations in jeopardy and dampen employers’ ability to create new jobs, as well as to retain existing ones. “This is an issue that touches every person in every community in Washington state,” said Kris Johnson, President and CEO of the Association of Washington Business. “In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them.”

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

“Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members,” said Washington Farm Bureau CEO John Stuhlmiller. “But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology’s challenging but achievable standards will deliver something that can work for the state.”

“We look forward to working with the state Department of Ecology to replace the EPA’s unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state,” Stuhlmiller concluded.

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**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]

**Sent:** Tuesday, February 21, 2017 4:21 PM

**To:** Gildersleeve, Melissa (ECY) <[MGIL461@ECY.WA.GOV](mailto:MGIL461@ECY.WA.GOV)>; Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>; Brown, Chad (ECY) <[CHBR461@ECY.WA.GOV](mailto:CHBR461@ECY.WA.GOV)>

**Cc:** Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>; Guzzo, Lindsay <[Guzzo.Lindsay@epa.gov](mailto:Guzzo.Lindsay@epa.gov)>

**Subject:** WA toxic criteria petition

FYI – We received this today from NWEA.

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Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
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## Message

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**From:** Shaw, Hanh [Shaw.Hanh@epa.gov]  
**Sent:** 5/10/2019 10:08:33 PM  
**To:** mgil461@ECY.WA.GOV; chbr461@ecy.wa.gov [CHBR461@ECY.WA.GOV]  
**CC:** Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** Notice: EPA approves Washington's 2016 human health criteria water quality standards  
**Attachments:** EPA Approval WA WQS HHC signed 5-10-2019.pdf

Today EPA announced that the agency has approved the human health criteria water quality standards that Washington State originally submitted to the agency in 2016 after determining the state's proposal is protective of its designated uses, based on sound science, and consistent with the Clean Water Act. The current federally-promulgated water quality standards for Washington will remain in effect until the agency completes the process to withdraw these standards. Today's action restores Washington's role as the primary authority for adopting water quality standards in the state and EPA remains committed to supporting the state on implementation of its water quality standards. The document is attached.

### Background

In August 2016, Washington State's Department of Ecology (Ecology) promulgated water quality standards and submitted them to EPA for approval. This submittal included 192 new human health criteria (HHC) for 97 priority pollutants that are applicable to all surface waters in the state. Ecology's 2016 standards were crafted after years of engagement and collaboration with EPA, stakeholders, and tribes.

In November 2016, EPA partially approved and partially disapproved Washington's water quality standards, approving 45 human health criteria (HHC), disapproving 143 HHC, and taking no action on four HHC. For the HHC that EPA disapproved, EPA finalized a federal rule for Washington in accordance with the Clean Water Act. These federal water quality standards are currently in effect in Washington.

In February 2017, EPA received a petition from several organizations to reconsider the agency's November 2016 partial disapproval. In August 2018, EPA decided to reconsider its 2016 partial disapproval of Washington's HHCs. Upon reconsideration, EPA, through today's action, has reversed the agency's 2016 partial disapproval of certain HHC (excluding arsenic).

EPA intends to propose to withdraw the federally promulgated criteria from the federal rule through a subsequent notice and comment rulemaking process.

More information: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington>

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
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OFFICE OF THE REGIONAL  
ADMINISTRATOR

MAY 10 2019

Ms. Maia Bellon, Director  
Department of Ecology  
P.O. Box 47600  
Olympia, Washington 98504-7600

Re: The EPA's Reversal of the November 15, 2016 Clean Water Act Section 303(c) Partial Disapproval of Washington's Human Health Water Quality Criteria and Decision to Approve Washington's Criteria

Dear Ms. Bellon:

On November 15, 2016, the EPA partially approved and partially disapproved certain human health criteria (HHC) that the Washington Department of Ecology (Ecology) submitted to the Agency for review on August 1, 2016.<sup>1</sup> In response to a February 21, 2017, petition from several entities,<sup>2</sup> the EPA has reconsidered its partial disapproval. For the reasons herein, the EPA is approving certain HHC under the Clean Water Act (CWA) section 303(c) that the Agency previously disapproved. Upon reexamination, the EPA concludes that Ecology's HHC are protective of its designated uses and based on sound science.

The EPA initially promulgated HHC for toxic pollutants applicable to waters in the state of Washington in the 1992 National Toxics Rule (NTR).<sup>3</sup> Ecology's August 1, 2016, submittal contained 192 new HHC for 97 priority pollutants that are applicable to all surface waters of the State. Ecology's HHC are located in the Water Quality Standards for Surface Waters of the state of Washington (Chapter 173-201A-240 WAC).

On November 15, 2016, of the 192 new HHC proposed by Ecology, the EPA approved 45 HHC, disapproved 143 HHC, and deferred action on four HHC in Table 240 of Ecology's standards. Under the EPA's inherent authority to reconsider its prior decisions and in accordance with CWA section 303(c)

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<sup>1</sup> November 15, 2016. Letter (EPA Partial Disapproval Letter) and enclosed Technical Support Document (Partial Disapproval TSD) from Daniel D. Opalski, Director, Office of Water and Watersheds, EPA Region 10 to Maia Bellon, Director, Department of Ecology, Re: EPA's Partial Approval/Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools.

<sup>2</sup> February 21, 2017. Petition for Reconsideration of EPA's Partial Disapproval of Washington's August 1, 2016 submission on Human Health Water Quality Criteria and Implementation Tools, and Repeal of the Final Rule Revision of Certain Federal Water Quality Standards Applicable to Washington, 81 Fed. Reg 85,417 (Nov. 28, 2016), submitted by Northwest Pulp & Paper Association, American Forest and Paper Association, Association of Washington Business, Greater Spokane Incorporated, Treated Wood Council, Western Wood Preservers Institute, Utility Water Act Group, and Washington Farm Bureau.

<sup>3</sup> EPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. <http://water.epa.gov/lawsregs/rulesregs/ntrl/>. Amended in 1999 for PCBs. <http://water.epa.gov/lawsregs/rulesregs/ntrfaci.cfm>.

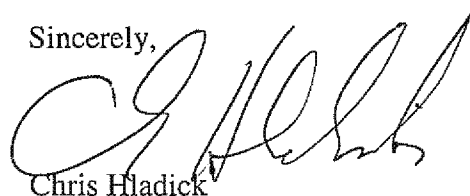
and the implementing regulations at 40 CFR Part 131, the EPA is reversing its disapproval of 141 of Ecology's HHC, including the HHC for polychlorinated biphenyls (PCBs), and instead approving the 141 previously disapproved HHC. In addition, the EPA is reaffirming its November 2016 disapproval of the two HHC associated with arsenic. Lastly, the EPA is approving four criteria for two pollutants (thallium and 2,3,7,8-TCDD (dioxin)) that the EPA previously deferred action on in November 2016.

A summary of the EPA's action is further described in the enclosed *Technical Support Document, The EPA's Reversal of the November 15, 2016 Clean Water Act Section 303(c) Partial Disapproval of Washington's Human Health Water Quality Criteria and Decision to Approve Washington's Criteria*. The EPA's action applies only to water bodies in the state of Washington and does not apply to waters that are within Indian Country, as defined in 18 U.S.C. § 1151.

In light of this decision, the EPA intends to initiate a notice and comment process through a separate notice of proposed rulemaking to withdraw the related federally promulgated HHC. Pursuant to 40 CFR 131.21(c), the HHC approved in this action will not be in effect for CWA purposes until the corresponding federally promulgated HHC are withdrawn.

The EPA appreciates Ecology's efforts to update its HHC. If you have any questions or concerns, please contact me or Dan Opalski at (206) 553-1855 or opalski.dan@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Hladick', is written over the typed name.

Chris Hladick  
Regional Administrator

Enclosure

cc: Ms. Heather Bartlett, WA Department of Ecology

# Technical Support Document

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The EPA's Reversal of the November 15, 2016  
Clean Water Act Section 303(c) Partial  
Disapproval of Washington's Human Health  
Water Quality Criteria  
Submitted on August 1, 2016 and Decision to  
Approve Washington's Criteria

May 10, 2019

# Technical Support Document

## The EPA's Reversal of the November 15, 2016 Clean Water Act Section 303(c) Partial Disapproval of Washington's Human Health Water Quality Criteria Submitted on August 1, 2016 and Decision to Approve Washington's Criteria

### Table of Contents

<b>I.</b>	<b>Introduction</b>	5
<b>II.</b>	<b>Background</b>	5
A.	<i>The Clean Water Act and State Water Quality Standards</i>	6
B.	<i>How Human Health Criteria are Developed</i>	7
C.	<i>History of Human Health Criteria in Washington</i>	8
<b>III.</b>	<b>Washington's 2016 Submittal of Human Health Criteria and the EPA's Action</b>	9
A.	<i>Washington's Designated Uses Related to Protection of Human Health</i>	11
B.	<i>Cancer Risk Level</i>	12
C.	<i>Cancer Slope Factor and Reference Dose</i>	12
D.	<i>Fish Consumption Rate</i>	13
E.	<i>Bioconcentration Factors (BCFs)/Bioaccumulation Factors (BAFs)</i>	14
F.	<i>Relative Source Contributions (RSCs)</i>	17
G.	<i>Drinking Water Intake</i>	20
H.	<i>Body Weight</i>	20
I.	<i>Polychlorinated Biphenyls (PCBs)</i>	21
J.	<i>Arsenic</i>	22
K.	<i>Thallium and 2,3,7,8-TCDD (Dioxin)</i>	22
<b>IV.</b>	<b>Tribal Treaty Rights and Washington's FCR and Cancer Risk Level</b>	23
<b>V.</b>	<b>The EPA's Reversal of the November 15, 2016 Clean Water Act Section 303(c) Partial Disapproval of Washington's Human Health Water Quality Criteria and Approval of Those Criteria</b>	26

## **I. Introduction**

Upon reconsideration, the EPA is reversing the majority of its November 2016 partial disapproval and approving certain human health criteria (HHC) previously submitted to the EPA by the state of Washington. As discussed below, EPA has now concluded that Washington's HHC are both protective of its designated uses and based on sound science.

## **II. Background**

Starting in 2010, the Washington Department of Ecology (Ecology) engaged in extensive public outreach, held numerous meetings with stakeholders, and worked collaboratively with the EPA and tribes to develop and promulgate HHC.<sup>4</sup> On August 1, 2016, Ecology submitted a package of state-promulgated HHC (found at WAC 173-201A-240) to the EPA for review and action pursuant to the EPA's authority under Clean Water Act (CWA) section 303(c). On November 15, 2016, the EPA disapproved 143 of the 192 HHC submitted by Ecology. The EPA's disapprovals were based on: 1) a comparison between Ecology's criteria and criteria that the EPA calculated at the time using the EPA's national recommended HHC and Ecology's fish consumption rate; and 2) a finding that Ecology had not adequately described its rationale for departing from the EPA's national recommendations. In accordance with CWA section 303(c) requirements, concurrent with its partial disapproval of Ecology's submittal, the EPA finalized a federal rule for the 143 HHC that it disapproved, which became effective December 28, 2016.<sup>5</sup>

On February 21, 2017, several groups filed a petition requesting that the EPA reconsider its disapproval action on Washington's HHC and repeal or withdraw the federal rule. Between February and July 2017, three other entities sent the EPA letters requesting that the EPA deny the petition.<sup>6</sup> On August 3, 2018, the EPA provided notice of its intent to reconsider its action in response to the petition.<sup>7</sup> On August 7, 2018, Ecology sent a letter to the EPA opposing reconsideration and indicating the State agency's preference to focus on implementing the federal rule.<sup>8</sup> The EPA recently received correspondence from Ecology,<sup>9</sup> the Attorney General of

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<sup>4</sup> EPA Partial Disapproval Letter at 1.

<sup>5</sup> *Revision of Certain Water Quality Standards Applicable to Washington*, 81 FR 85417 (November 28, 2016)

<sup>6</sup> Earthjustice (on behalf of Waterkeepers Washington), Northwest Indian Fisheries Commission, and the Jamestown S'Klallam Tribe.

<sup>7</sup> August 3, 2018. Letter from David P. Ross, Assistant Administrator, Office of Water, EPA to Ms. Penny Shamblin, Counsel for Utility Water Act Group, Re: Petition for Reconsideration of the EPA's Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools submitted by the state of Washington on August 1, 2016.

<sup>8</sup> August 7, 2018. Letter from Maia D. Bellon, Director, Washington Department of Ecology, to Mr. David Ross, Assistant Administrator, Office of Water, EPA, Re: The Petition to reconsider Washington's Human Health Water Quality Criteria and Implementation Tools.

<sup>9</sup> May 7, 2019. Letter from Maia D. Bellon, Director, Washington Department of Ecology, to Hon. Andrew R. Wheeler, Administrator, EPA, Re: EPA's Intention to Reconsider Washington State's Water Quality Standards for Human Health Criteria.

the state of Washington,<sup>10</sup> the Northwest Indian Fisheries Commission,<sup>11</sup> and the Lower Elwha Klallam Tribe.<sup>12</sup> These letters focus on concerns relating to revising or repealing the federal water quality standards that the EPA promulgated for Washington and the EPA's authority under the CWA to propose new standards for a state. The EPA's action today is a reversal of the Agency's 2016 partial disapproval of Washington's HHC and a decision to approve those standards. The Agency is not revising or repealing the federal standards. The EPA will consider these issues during the rulemaking process that will follow this approval action. In addition, the letters raise concerns about EPA's authority to act at this time on the HHC submitted by Washington in 2016. EPA disagrees with these concerns. EPA has inherent authority to reconsider its prior adjudications and is doing so for the reasons explained below.<sup>13</sup>

Although Ecology has stated a preference for implementing the federal HHC rule rather than its own promulgated rule, today's decision restores Ecology's role as primary authority for adopting water quality standards in Washington, consistent with the CWA. The State remains free to promulgate the federal standards into state law if it so chooses; however, the EPA intends to publish a notice of proposed rulemaking to withdraw the federal standards because the EPA has determined that the state-promulgated HHC are protective of Washington's designated uses and based on sound science. Upon the EPA's final withdrawal of the federal standards there will be no requirement for the State to implement those standards.

#### *A. The Clean Water Act and State Water Quality Standards*

The CWA approaches restoration and protection of the Nation's waters as a partnership between states and the federal government, assigning certain functions to each in striking the balance of the statute's overall regulatory scheme. Pursuant to this cooperative federalism balance, Congress expressly recognized the role that states would continue to exercise in preventing, reducing, and eliminating pollution: "It is the policy of Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, reservation, and enhancement) of land and water resources[.]"<sup>14</sup> As the Supreme Court has explained, the statute "anticipates a partnership between the States and the Federal Government," toward a shared objective of restoring and maintaining the integrity of the Nation's waters.<sup>15</sup>

The CWA assigns to states and authorized tribes the primary authority for adopting water quality standards.<sup>16</sup> After states adopt water quality standards, they must be submitted to the EPA for review and action in accordance with the CWA. State water quality standards must protect

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<sup>10</sup> May 8, 2019. Letter from Bob Ferguson, Attorney General, Washington, to Hon. Andrew R. Wheeler, Administrator, EPA.

<sup>11</sup> May 3, 2019. Letter from Justin Parker, Executive Director, Northwest Indian Fisheries Commission, to Hon. Andrew R. Wheeler, Administrator, and Mr. David Ross, Assistant Administrator, Office of Water, EPA, Re: EPA Action Regarding Washington's Human Health Water Quality Criteria.

<sup>12</sup> May 7, 2019. Letter from Frances G. Charles, Chairwoman, to Hon. Andrew R. Wheeler, Administrator, EPA, Re: Washington State Water Quality Standards (Human Health Criteria)

<sup>13</sup> See *infra* Footnote 31.

<sup>14</sup> 33 U.S.C. § 1251(b).

<sup>15</sup> *Arkansas v. Oklahoma*, 503 U.S. 91, 101 (1992).

<sup>16</sup> 33 U.S.C. 1313(a), (c)

designated uses, be based on sound scientific rationale and contain sufficient parameters or constituents to protect the designated use.<sup>17</sup> State submittals to the EPA must include use designations, standards sufficient to protect the designated uses, methods used and analyses conducted to support the standards, an antidegradation policy, certification by the state's Attorney General or other appropriate authority that the standards were duly adopted pursuant to state law, and general information to aid the EPA in determining the adequacy of the scientific basis of the standards.<sup>18</sup>

section 304(a) of the CWA requires the EPA to develop recommended water quality criteria that states and tribes may use to develop their own water quality standards, including HHC. These 304(a) recommendations are developed by the EPA and updated periodically to reflect the most recent scientific knowledge.<sup>19</sup> Although the EPA's 304(a) recommendations reflect the most recent science, they do not represent the only scientifically defensible method for deriving water quality standards that are protective of designated uses. Indeed, states are not required to adopt the EPA's 304(a) recommended criteria, rather states are encouraged to adopt their own numeric water quality standards based on EPA's 304(a) recommended criteria, 304(a) recommended criteria that are modified to reflect site-specific conditions, or other scientifically defensible methods.<sup>20</sup>

Importantly, in developing 304(a) recommendations, the EPA is required to include "the latest scientific knowledge." By contrast, states are required to adopt HHC that are based on "sound scientific rationale" and "scientifically defensible methods."<sup>21</sup> In other words, states are not required to adopt wholesale the national 304(a) recommendations. Rather, states can take into account the latest scientific information that is part of those recommended criteria as they develop their scientifically defensible state-specific standards, based on risk- and resource-management decisions, so long as the resulting HHC are protective of designated uses and scientifically defensible.

The EPA's role is to review the standards for consistency with the CWA and either approve the standards within 60 days of receipt, or disapprove within 90 days.<sup>22</sup> If the EPA disapproves a state's water quality standards (including HHC) and the state does not remedy the disapproval within 90 days, the EPA is required to promptly propose and promulgate 90 days after proposal a federal water quality standard for the state.<sup>23</sup>

#### *B. How Human Health Criteria are Developed*

The EPA follows its 2000 Human Health Methodology when deriving its national recommended water quality standards, including HHC, under CWA section 304(a).<sup>24</sup> HHC are based on two

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<sup>17</sup> 40 CFR 131.5(a)(2), 131.11(a)

<sup>18</sup> 40 CFR 131.6(a)-(f)

<sup>19</sup> 33 U.S.C. § 1314(a)(1)

<sup>20</sup> 40 CFR 131.11(b)

<sup>21</sup> 40 CFR 131.11(a)(1) and (b)(1)(iii)

<sup>22</sup> 33 USC 1313(c)(2)(A), 40 CFR 131.5(a)

<sup>23</sup> 33 USC 1313(c)(4)

<sup>24</sup> USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 822-B-00-004.



types of biological endpoints: (1) carcinogenicity and (2) systemic toxicity (i.e., all adverse effects other than cancer). HHC for carcinogenic effects are calculated using an equation with the following input parameters: cancer slope factor (CSF), cancer risk level, body weight, drinking water intake rate, fish consumption rate (FCR), and bioaccumulation factors (BAFs). HHC for non-carcinogenic and nonlinear carcinogenic effects are calculated using a reference dose (RfD) in place of a CSF and cancer risk level, and a relative source contribution (RSC) factor, which is intended to ensure that an individual's total exposure to a given pollutant from all sources does not exceed the RfD. Each of these inputs is discussed in more detail in the EPA's 2000 Human Health Methodology.<sup>25</sup>

In June 2015, the EPA finalized updates to the Agency's national 304(a) HHC recommendations for 94 chemical pollutants.<sup>26</sup> These updated recommendations reflect the latest scientific knowledge and include recommendations regarding body weight, drinking water consumption rate, FCR, BAFs, toxicity values, and RSC values that can be used to calculate HHC. The EPA accepted public comments on the updated 304(a) criteria from May to August 2014 and published responses to those comments when it finalized the criteria recommendations in June 2015.

### *C. History of Human Health Criteria in Washington*

Starting in 2010, the EPA worked with Washington to update the State's HHC. At that time, the only HHC in effect in Washington were from the National Toxics Rule (NTR), promulgated by the EPA in 1992.<sup>27</sup> Ecology first proposed new HHC in January 2015. These HHC were based on a cancer risk level of  $10^{-5}$ , a FCR of 175 grams/day, and a mandate that none of the State's HHC, except for arsenic, would be a higher concentration than the NTR that was in place at the time. These HHC were intended to be coupled with an innovative and comprehensive approach to toxics reduction that the State legislature would enact, referred to as the toxics reduction bill, that the State asserted "would have resulted in reductions to a broad suite of toxics at their sources."<sup>28</sup> After the legislature failed to enact the toxics reduction bill, Ecology's HHC efforts were delayed. On September 14, 2015, the EPA Administrator determined that updated HHC were "necessary" pursuant to CWA section 303(c)(4)(B), and the EPA proposed federal HHC for Washington on September 14, 2015.

On August 1, 2016, Ecology adopted updated HHC that were not linked to any proposed legislation. These updated HHC incorporated some, but not all, of the inputs from EPA's 2015 304(a) recommendations and were based on a cancer risk level of  $10^{-6}$ , a FCR of 175 g/day, and chemical-specific approaches for arsenic and polychlorinated biphenyls (PCBs). These elements of Washington's HHC package are more protective than the State's first proposal due to Ecology promulgating criteria based on a cancer risk level of  $10^{-6}$  for the majority of the carcinogens,

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<sup>25</sup> USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 822-B-00-004.

<sup>26</sup> 80 Fed. Reg. 36,986 (Jun. 29, 2015), *Final Updated Ambient Water Quality Criteria for the Protection of Human Health*, <https://www.gpo.gov/idsys/pkg/FR-2015-06-29/html/2015-15912.htm>.

<sup>27</sup> The EPA. 1992. *Toxics Criteria for Those States Not Complying with Clean Water Act*, section 303(c)(2)(B). 40 CFR Part 131.36. <http://water.epa.gov/lawsregs/rulesregs/ntr/>. Amended in 1999 for PCBs. <http://water.epa.gov/lawsregs/rulesregs/ntrfact.cfm>.

<sup>28</sup> Ecology submittal at 12.

instead of using the  $10^{-5}$  cancer risk level proposed in 2015. Ecology's new and revised HHC included 192 new HHC for 97 priority pollutants, applicable to all surface waters of the State and were adopted on August 1, 2016, before the EPA finalized its proposed federal rule for Washington.<sup>29</sup>

On November 15, 2016, the EPA took action under CWA section 303(c) to approve in part, disapprove in part, and defer action in part on the HHC submitted by Ecology. Coincident with the partial disapproval, EPA promulgated federal HHC for Washington for the disapproved criteria. The EPA's federal HHC incorporated all inputs from EPA's 304(a) recommendations.

### **III. Washington's 2016 Submittal of Human Health Criteria and the EPA's Action**

During its 2016 review of Ecology's HHC submittal, the EPA compared Ecology's criteria values against a set of criteria that the EPA calculated based on its 2015 updated national 304(a) recommendations, combined with Ecology's selected FCR of 175 g/day. Because Ecology's HHC incorporated some of the inputs from the EPA's 304(a) recommendations, and the EPA's criteria incorporated all inputs from the 304(a) recommendations, the resulting HHC were different. Some of Ecology's HHC were more stringent than EPA's HHC and some were less stringent. Based on this comparison, the EPA approved 45 of Ecology's HHC that were as stringent or more stringent than EPA's calculated HHC, and the EPA disapproved 143 of Ecology's HHC that were less stringent. The EPA took no action on four new HHC submitted by Ecology for two pollutants (water + organisms and organisms only criteria for thallium and 2,3,7,8-TCDD (dioxin)).

In the majority of cases where the EPA disapproved Ecology's HHC, it was because the State calculated HHC using BCFs instead of using the national default BAFs from the 2015 304(a) recommendations, and because the State used an RSC value of 1 for non-carcinogens instead of the EPA's recommended range of 0.2-0.8. The EPA's partial disapproval asserted that the HHC that were less stringent than the EPA's calculated criteria, were not protective of the applicable designated uses, and that Ecology could remedy the partial disapproval by using the 304(a) recommended BAFs and a RSC of 0.2-0.8 for each of the disapproved HHC. *Id.*

As described above, the EPA's 304(a) default criteria are recommendations for states and authorized tribes to consider when promulgating water quality standards. States are not mandated to adopt the EPA's recommendations in whole or in part and are authorized to make appropriate risk-management decisions, including adopt criteria based on appropriate local information and data, and other scientifically defensible methods. The EPA's partial disapproval recognized the State's lengthy rulemaking effort, and its collaboration with key stakeholders, the EPA and tribes, but nevertheless concluded that "it was necessary to [ ] adopt criteria based on the latest national criteria recommendations in the absence of sufficient rationale for departing from those recommendations."<sup>30</sup> Neither the CWA, the EPA's implementing regulations, the EPA's 2000 Methodology, nor the 2015 304(a) recommendations define or attempt to explain what is

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<sup>29</sup> Ecology. 2016. Letter dated August 1, 2016, from Maia Bellon, Director, Washington Department of Ecology, to Dennis McLerran, Regional Administrator, Region 10, U.S. Environmental Protection Agency, RE: Submittal of Water Quality Standards for Clean Water Act.

<sup>30</sup> Partial Disapproval Letter at 4.

“sufficient rationale” to support a state’s departure from the national recommended criteria. The EPA’s partial disapproval also did not explain what level of rationale would be sufficient, and instead directed that Ecology could remedy the disapproval by adopting the EPA’s 304(a) recommendations in their entirety. In other words, the EPA treated the recommended criteria as mandatory criteria, which is a departure from the CWA, the EPA’s federal regulations and longstanding EPA policy.

The EPA acknowledges that the Agency previously disapproved certain HHC that Ecology submitted for review. Upon further review, EPA has determined that its prior partial disapproval was inappropriate for the reasons explained below. During the reconsideration process, the EPA reviewed Ecology’s submission and more fully considered the State’s rationales and justifications. Administrative agencies possess the inherent authority to reconsider prior decisions, and the EPA is now exercising its authority to revise its earlier disapprovals.<sup>31</sup>

Upon reconsideration, the EPA undertook a holistic review of Washington’s HHC package and evaluated the protectiveness of the HHC based on the suite of risk-management decisions, the totality of the inputs into the HHC equations, and the resulting numeric criteria. The EPA also respects Washington’s lengthy and thoughtful process wherein the State considered the health and safety of its citizens and the appropriateness of applying the EPA’s new national recommendations to the State’s resources.

Additionally, the EPA now acknowledges that Ecology’s regulatory processes were several years underway when the EPA finalized its updated national 304(a) recommendations in 2015, which incorporated new national default BAF and RSC values (among other updates, as noted above). In the years prior to 2015 when Ecology was developing updates to its HHC, the State had access to the EPA’s prior national 304(a) recommendations which incorporated different inputs, including BCFs.

Upon reconsideration, the EPA now concludes that in some cases, it may be appropriate to evaluate a state’s water quality standards, including HHC, based on a combination of existing and prior 304(a) recommendations. This is especially true in cases like Washington’s, where the State spent several years developing HHC before EPA issued updated 304(a) recommendations (and subsequently issued supporting documentation). Responsible state resource managers should be afforded a meaningful opportunity to evaluate the latest scientific information and determine how best to incorporate it into a protective HHC package. The EPA acknowledges that the issuance of new 304(a) recommendations that reflect “the latest scientific information” does not immediately render the EPA’s prior 304(a) recommendations or the underlying science unsound or indefensible. Instead, the updated 304(a) recommendations should be evaluated by

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<sup>31</sup> *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42 (1983) (“[W]e fully recognize that ‘regulatory agencies do not establish rules of conduct to last forever,’ . . . and that an agency must be given ample latitude to ‘adapt their rules and policies to the demands of changing circumstances.’”); *FCC v. Fox Television Studios*, 556 U.S. 502 (“We find no basis in the Administrative Procedure Act or in our opinions for a requirement that all agency change be subjected to more searching review.”); *Belville Mining Co. v. United States*, 999 F.2d 989, 997 (6th Cir. 1993) (“Even where there is no express reconsideration authority for an agency, however, the general rule is that an agency has inherent authority to reconsider its decision, provided that reconsideration occurs within a reasonable time after the first decision.”).

states in totality, within the context of state-specific information, and within the triennial review framework provided in the CWA.

CWA section 303(c) provides that states and authorized tribes are to conduct triennial reviews of WQS, including HHC, for possible revision, and the EPA's regulations require states to adopt new or revised criteria for parameters for which the EPA has published new or updated CWA section 304(a) criteria recommendations, or provide an explanation for not doing so (40 CFR 131.20(a)). Therefore, Ecology will have the opportunity to review and revisit its HHC every three years and can consider the EPA's updated section 304(a) recommendations during its triennial reviews, as appropriate. The EPA understands that Ecology will be starting a triennial review in 2019.

The EPA also recognizes that states and authorized tribes will use discretion in making resource- and risk-management decisions related to the protection of human health. Section 101(b) of the CWA explains that one of the Act's foundational policies is "to recognize, preserve, and protect the primary responsibilities and rights of states." The EPA has reconsidered its disapproval of Ecology's HHC and concludes that the criteria are protective of the State's designated uses and are based on sound science. The EPA is therefore approving the majority of those criteria.

#### *A. Washington's Designated Uses Related to Protection of Human Health*

Washington's human health criteria were developed in accordance with EPA's 2000 Human Health Methodology to protect human health from long-term exposure to toxic pollutants in drinking water and through eating fish containing these pollutants.<sup>32</sup> For human health protection, the EPA recommends that states apply HHC for toxics to all waters with designated uses providing for public water supply protection (and therefore a potential water consumption exposure route), recreation, and/or aquatic life protection (and therefore a potential fish consumption route).<sup>33</sup>

Washington's designated uses for surface waters are found in WAC 173-201A-600 through 612. WAC 173-201A-600(1) states, "All surface waters of the state not named in Table 602 are to be protected for the designated uses of: Salmonid spawning, rearing and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; harvesting; commerce and navigation; boating; and aesthetic values." Washington's HHC address the general designated uses of fish harvesting, domestic water supply, and primary contact recreation and the specific uses in WAC 173-201A: Fresh waters – Harvesting (fish harvesting), Domestic Water (domestic water supply), and Recreational Uses (primary contact recreation); Marine waters – Shellfish Harvesting (shellfish—clam, oyster, and mussel—harvesting), Harvesting (salmonid and other fish harvesting, and crustacean and other shellfish—crabs, shrimp, scallops, etc.—harvesting), and Recreational Uses (primary contact recreation). See WAC 173-201A-600 and WAC 173-201A-610.

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<sup>32</sup> EPA's 2000 Human Health Methodology. Available at <https://www.epa.gov/wqc/human-health-water-quality-criteria>

<sup>33</sup> Water Quality Standards Handbook, U.S. Environmental Protection Agency, Office of Water, Washington, D.C., EPA-823-B-94-005a (Aug. 1994). Available at <https://www.epa.gov/wqs-tech/water-quality-standards-handbook>

As described below and consistent with the EPA's 2000 Methodology, Ecology's "water + organisms" criteria apply where Washington has designated domestic water supply as a use. Also consistent with the EPA's 2000 Methodology, the "organisms only" criteria apply where Washington has designated one of the uses listed above, but not the domestic water supply use.

### *B. Cancer Risk Level*

The EPA's national 304(a) recommended HHC are typically based on the assumption that carcinogenicity is a "non-threshold phenomenon," which means that there are no "no-effect" levels, because even extremely small doses are assumed to cause a finite increase in the incidence of cancer. Therefore, the EPA calculates 304(a) HHC for carcinogenic effects as pollutant concentrations corresponding to lifetime increases in the risk of developing cancer. The EPA calculates its national 304(a) recommended HHC values at a  $10^{-6}$  (one in one million) cancer risk level and recommends states incorporate lifetime cancer risk levels of  $10^{-6}$  or  $10^{-5}$  (one in one hundred thousand) for the general population. Consistent with the 2000 Methodology, a  $10^{-5}$  risk level is appropriate to protect the general population, as long as the criteria ensure that highly exposed populations (e.g., sport fishers or subsistence fishers) do not exceed a  $10^{-4}$  risk level.<sup>34</sup>

The EPA notes that selecting an appropriate cancer risk level is a risk management decision, and states and authorized tribes can choose a risk level within or more stringent than the EPA's recommended ranges when deriving HHC. If the pollutant is not considered to have the potential for causing cancer in humans (i.e., systemic toxicants), the EPA assumes that the pollutant has a threshold (the reference dose or RfD) below which a physiological mechanism exists to avoid or overcome the adverse effects of the pollutant.

The EPA takes an integrated approach and considers both cancer and non-cancer effects when deriving HHC. Where sufficient data are available, the EPA derives HHC using both carcinogenic and non-carcinogenic toxicity endpoints and recommends the lower of the two values.

Ecology's HHC for carcinogens are calculated using a risk level of  $1 \times 10^{-6}$  (1:1,000,000), except for the chemical-specific risk level for PCBs of  $2.3 \times 10^{-5}$ . These criteria include the use of a fish consumption rate of 175 grams per day, a level representative of high fish consumers in the State.<sup>35</sup> Washington's goal in adopting the criteria was to protect high end consumers (as opposed to the general population) at a risk level of  $10^{-6}$  and for PCBs at a level of  $2.3 \times 10^{-5}$ . Ecology's cancer risk level is consistent with the EPA's 2000 Methodology and, based on the 43 g/day fish consumption rate for the general population provided in Ecology's submittal, protects the general population at a risk level  $5.6 \times 10^{-6}$  for PCBs, and  $2.5 \times 10^{-7}$  for other pollutants.<sup>36</sup>

### *C. Cancer Slope Factor and Reference Dose*

A dose-response assessment is required to understand the quantitative relationships between the

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<sup>34</sup> *Id.* at pp. 2-6 to 2-7.

<sup>35</sup> Department of Ecology, *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Pages 28-31. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>36</sup> Department of Ecology, *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Pages 28-31. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

exposure to a pollutant and the onset of human health effects. The EPA evaluates dose-response relationships derived from animal toxicity and human epidemiological studies to derive dose-response metrics. For carcinogenic toxicological effects, the EPA uses an oral CSF to derive HHC. The oral CSF is an upper bound, approximating a 95 percent confidence limit, on the increased cancer risk from a lifetime oral exposure to a stressor. For non-carcinogenic effects, the EPA uses the RfD to calculate human health criteria. A RfD is an estimate of a daily oral exposure of an individual to a substance that is likely to be without an appreciable risk of deleterious effects during a lifetime. A RfD is typically derived from a laboratory animal dosing study in which a no-observed-adverse-effect level (NOAEL), lowest-observed-adverse-effect level (LOAEL), or benchmark dose can be obtained. Uncertainty factors are applied to reflect the limitations of the data. The EPA's Integrated Risk Information System (IRIS)<sup>37</sup> was the primary source of toxicity values (i.e., RfD and CSF) for the EPA's 2015 updated national 304(a) recommended HHC.<sup>38</sup>

With one exception, Ecology's HHC include the cancer slope factors and reference dose values consistent with the EPA's 2015 updated national 304(a) recommendations and EPA's 2000 Human Health Methodology. For 2,3,7,8-TCDD (dioxin), Ecology used the most recent reference dose from the EPA's IRIS program which is a scientifically defensible approach and consistent with the CWA and EPA guidance.

#### *D. Fish Consumption Rate*

The EPA's 2015 updated national 304(a) recommended HHC use a default FCR of 22 g/day for consumption of fish and shellfish from inland and nearshore waters, multiplied by pollutant-specific BAFs to account for the amount of the pollutant in the edible portions of the ingested species. The EPA's default FCR of 22 g/day represents the 90th percentile consumption rate of fish and shellfish from inland and nearshore waters for the U.S. adult population 21 years of age and older, based on National Health and Nutrition Examination Survey (NHANES) data from 2003 to 2010.<sup>39,40</sup> Although the EPA uses these default values to calculate national 304(a) recommended HHC, the EPA's 2000 Methodology notes a preference for the use of local data to calculate HHC (e.g., locally derived FCRs, drinking water intake rates and body weights, and

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<sup>37</sup> Integrated Risk Information System (IRIS), U.S. Environmental Protection Agency, Office of Research and Development, Washington, D.C. Available at [www.epa.gov/iris](http://www.epa.gov/iris).

<sup>38</sup> 80 Fed. Reg. 36,986 (Jun. 29, 2015), Final Updated Ambient Water Quality Criteria for the Protection of Human Health. See also, Final 2015 Updated National Recommended Human Health Criteria. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. Available at <https://www.epa.gov/wqc/human-health-water-quality-criteria>.

<sup>39</sup> Estimated Fish Consumption Rates for the U.S. Population and Selected Subpopulations (NHANES 2003-2010). U.S. Environmental Protection Agency, Washington, DC, USA, EPA 820-R-14-002 (Apr. 2014). Available at <https://www.epa.gov/fish-tech/estimated-fish-consumption-rates-reports>

<sup>40</sup> The EPA's national FCR is based on the total rate of consumption of fish and shellfish from inland and nearshore waters (including fish and shellfish from local, commercial, aquaculture, interstate, and international sources). This is consistent with a principle that each state does its share to protect people who consume fish and shellfish that originate from multiple jurisdictions. Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions, U.S. Environmental Protection Agency (Jan. 2013). Available at <https://www.epa.gov/wqc/human-health-ambient-water-quality-criteria-and-fish-consumption-rates-frequently-asked>

waterbody-specific bioaccumulation rates) over national default values, where data are sufficient to do so, to better represent local conditions.<sup>41</sup>

When establishing a single value/criterion as a regulatory endpoint, states and the EPA must make several policy decisions regarding the members of the population that will be protected when using the waters for activities protected by the designated uses and the established criteria. In the EPA's 2000 Human Health Methodology, the EPA provides guidance to the states on the use of local and regional data to develop an appropriate fish consumption rate for the use in criteria derivation and encourages the states to use this data to determine the level of protection appropriate for state waters.

Ecology's evaluation of local data indicated that different groups of people harvest fish both recreationally and for subsistence.<sup>42</sup> Ecology made the risk management decision to base the FCR used in the HHC equation on highly exposed populations, which includes tribes, Asian Pacific Islanders, recreational and subsistence fishers, and immigrant populations, among other groups, as opposed to the general population.<sup>43</sup>

Ecology's 175g/day FCR is greater than the 95<sup>th</sup> percentile general population consumption rate for all fish and shellfish, including all salmon, restaurant, locally caught, imported, and from other sources, and represents the average consumption rate for the highest consumers of all fish and shellfish from Puget Sound waters.<sup>44</sup> This FCR selection is consistent with the EPA's 2000 Methodology which recommends deriving an appropriate FCR using an upper bound percentile of the general population and a mean or average of higher consuming populations.<sup>45</sup>

#### *E. Bioconcentration Factors (BCFs)/Bioaccumulation Factors (BAFs)*

BCFs describe the uptake and retention of a pollutant by an aquatic organism from water only while BAFs describe the uptake and retention of a pollutant by an aquatic organism from all sources (e.g., water, ingestion, and sediment). The magnitude of bioconcentration or bioaccumulation by aquatic organisms varies widely depending upon the pollutant but can be extremely high for some highly persistent and hydrophobic pollutants. For highly bioaccumulative pollutants, concentrations in aquatic organisms may pose unacceptable human health risks from fish consumption even when concentrations in water are too low to cause unacceptable health risks from drinking water consumption alone. The EPA's 2000 Human Health Methodology recommends the use of national BAFs in the calculation of ambient water quality criteria; however, the EPA did not develop national default BAFs until 2015.

The EPA's 2000 Human Health Methodology provides guidance on developing BAFs for the

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<sup>41</sup> EPA's 2000 Human Health Methodology, pp. 2-2, 2-10

<sup>42</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Pages 28-31. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>43</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Pages 28-31. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>44</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Pages 28-31. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>45</sup> EPA's 2000 Human Health Methodology, pp. 4-25 to 4-26.

protection of human health.<sup>46</sup> A subsequent technical support document to the 2000 Methodology entitled, *Technical Support Document Volume 2: Development of National Bioaccumulation Factors* (2003) provides added detail to the BAF calculation procedures outlined in the Methodology.<sup>47</sup> In 2009, the EPA published the *Technical Support Document Volume 3: Development of Site-Specific Bioaccumulation Factors*. This document provides guidance on different approaches that investigators can take to develop site-specific BAFs, and the factors that should be considered when selecting an approach for a given situation.<sup>48</sup> In the 2015 national 304(a) recommended HHC update, the EPA primarily used field-measured BAFs<sup>49</sup> and laboratory-measured BCFs with applicable food chain multipliers available from peer-reviewed, publicly available databases to develop national default BAFs for three trophic levels of fish. Where this information was not available, the EPA selected octanol-water partition coefficients ( $K_{ow}$  values) from peer-reviewed sources for use in calculating national BAFs.<sup>50</sup>

The EPA recommends that states use these methods when adopting HHC. The EPA recommends that the bioaccumulation technical support documents be used in conjunction with the 2000 Human Health Methodology. The bioaccumulation methodology documents encourage developing site-specific BAFs because the EPA recognizes that BAFs vary not only between chemicals and trophic levels, but also among different ecosystems and waterbodies.<sup>51</sup> Indeed, the BAF variable in the HHC equations may be more affected by site-specific waterbody factors than any other variable in the HHC equations. National average BAF values for a given chemical and trophic level may not provide the most accurate estimate of bioaccumulation for certain water bodies in the United States. At a given location, the BAF for a chemical may be higher or lower than the national BAF, depending on the nature and extent of site-specific influences.

While the EPA's 2000 Human Health Methodology recommends the use of BAFs in deriving human health criteria, development of BAFs is a time and resource intensive process, and BAFs can vary from site-to-site. Thus, it is difficult to develop BAFs on a statewide scale, and this has rarely been done. Indeed, while the EPA began recommending the use of BAFs in 2000, it was

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<sup>46</sup> EPA. 2000. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. Section 5. Available at: <http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf>

<sup>47</sup> EPA. December 2003. Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000). Technical Support Document Volume 2: Development of National Bioaccumulation Factors. Available at:

[http://water.epa.gov/scitech/swguidance/standards/upload/2005\\_05\\_06\\_criteria\\_humanhealth\\_method\\_tsdvol2.pdf](http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_tsdvol2.pdf)

<sup>48</sup> EPA. September 2009. Methodology for Deriving Ambient Water Quality Criteria for Protection of Human Health (2000). Technical Support Document Volume 3: Development of Site-Specific Bioaccumulation Factors. Available at:

[http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/2008\\_07\\_01\\_criteria\\_humanhealth\\_method\\_tsdvol3.pdf](http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/2008_07_01_criteria_humanhealth_method_tsdvol3.pdf)

<sup>49</sup> Data for the national default BAFs were collected in the Great Lakes and evaluated primarily for bioaccumulation of PCBs in those waters.

<sup>50</sup> Development of National Bioaccumulation Factors: Supplemental Information for EPA's 2015 Human Health Criteria Update, U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, EPA 822-R-16-001 (Jan. 2016). Available at <https://www.epa.gov/sites/production/files/2016-01/documents/national-bioaccumulation-factors-supplemental-information.pdf>

<sup>51</sup> EPA's 2000 Human Health Methodology, pp. 2-13.



not until the June 2015 304(a) recommendations that the EPA published national default BAF values, and even then only for 94 pollutants.

At the time Ecology was developing its HHC, the EPA had only provided the 2000 Methodology guidance on the calculation of national BAFs. The 304(a) recommendations and default national BAFs were published in June 2015, and then in January 2016, the EPA published supplemental information on development of the national recommended BAFs.<sup>52</sup> By that time, Ecology had spent several years developing its HHC inputs through extensive engagement with State-wide stakeholders and the EPA, and was preparing to finalize its proposed HHC based on the EPA's prior recommended BCFs, not the new national default BAFs.

Given the lack of any Washington-specific BAFs and consistent with prior EPA guidance, Ecology utilized BCFs instead of BAFs in deriving its new and revised HHC. Ecology's submittal included a dozen pages of summary explanation to support its science, policy, and risk-management decision to utilize BCFs instead of the EPA's new national default BAFs.<sup>53</sup> Ecology's submittal raised concerns that data used to develop the EPA's national BAFs may not be appropriate or reflective of Washington's water resources, and referenced local data on the percent lipid of individual species consumed from Washington waters and local data on dissolved organic carbon and particulate organic carbon that may affect bioaccumulation in Washington waters.<sup>54</sup> Ecology noted that BAFs based on trophic level 4 are not consistent with the FCR Ecology used, which includes shellfish as a significant portion of the diet.<sup>55</sup> Ecology raised concerns that the EPA had not provided sufficient publicly available information on the development of the national BAFs and, as a result, Ecology was unable to replicate the EPA's national default BAF values based on available information.<sup>56</sup>

Ecology also noted that the only way to effectively use BAFs in its HHC would be to develop State-specific BAFs which would have caused significant delays in the State's adoption of HHC.<sup>57</sup> Ecology also explained that the EPA currently uses a combination of BAFs and BCFs to calculate its national recommended water quality HHC, and the EPA used a combination of BAFs and BCFs for its 2015 proposed federal regulation for Washington.<sup>58</sup> Ecology asserted that both BAFs and BCFs could represent acceptable science choices for CWA purposes.<sup>59</sup>

The EPA's partial disapproval identifies some of Ecology's rationale (more fully described above) and concludes that, "Ecology did not demonstrate how its selection of outdated BCFs to derive human health criteria is scientifically defensible and protective of the applicable

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<sup>52</sup> USEPA. January 2016. *Development of National Bioaccumulation Factors: Supplemental Information for EPA's 2015 Human Health Criteria Update*. Office of Water, Washington, D.C. EPA 822-R-16-001. <http://www.epa.gov/sites/production/files/2016-01/documents/national-bioaccumulation-factors-supplemental-information.pdf>.

<sup>53</sup> Ecology submittal 44-56.

<sup>54</sup> Ecology submittal 48-50.

<sup>55</sup> WA Ecology, WAC 173-201A, Concise Explanatory Statement, p. 65.

<sup>56</sup> Ecology submittal 52-54.

<sup>57</sup> Ecology submittal 54.

<sup>58</sup> Ecology submittal 51.

<sup>59</sup> Department of Ecology, *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*, August 2016. Ecology Publication no. 16-10-025. Page 56.

designated uses.”<sup>60</sup> Instead of explaining why Ecology’s justification of the use of BCFs was insufficient, the EPA’s partial disapproval simply restated that the EPA recommends the use of BAFs and the EPA’s final federal rule for Washington (promulgated coincident with the partial disapproval) uses BAFs. The EPA’s partial disapproval disregarded Ecology’s rationale and failed to explain why the rationale was insufficient, failed to explain why the State’s BCF-derived criteria were not based on sound scientific rationale, and failed to explain why the criteria were not protective of designated uses. The partial disapproval also did not explain how the national default BAFs, derived from data collected in the Great Lakes, are appropriate for Washington’s resources. The EPA explained that to remedy the partial disapproval, Ecology should adopt HHC based on the national default BAFs without explaining why the national default BAFs were more appropriate to support Washington’s designated uses.<sup>61</sup> Importantly, where Ecology’s BCF-based criteria were more stringent than the EPA’s calculated BAF-based criteria, the EPA approved Ecology’s BCF-based criteria.<sup>62</sup> This demonstrates that the use of BCFs can result in protective HHC, and that the EPA only rejected the use of a BCF when it resulted in a higher numeric criteria.

Ecology’s submittal correctly explains that no single input into the HHC equations determines the degree of protection provided by the calculated numeric criteria.<sup>63</sup> Rather, the protectiveness of the criteria must be evaluated based on the suite of risk-management decisions, the totality of the inputs into the equations, and the resulting numeric criteria. Upon reconsideration, the EPA concludes that the BCFs utilized by Ecology are pollutant-specific, are consistent with the BCFs recommended by the EPA in prior national CWA § 304(a) HHC recommendations, and together with the other inputs into the HHC equations result in water quality criteria that are based on sound science and protective of the State’s designated uses, consistent with the rationale provided in Ecology’s submittal.

#### *F. Relative Source Contributions (RSCs)*

The EPA’s 2000 Human Health Methodology recommends applying an RSC of between 0.2 and 0.8 in the calculation of criteria for non-carcinogens to account for other sources of pollutants beyond water and fish.<sup>64</sup> The 2000 Human Health Methodology recommends an RSC ceiling of 0.8 (i.e., 80% of an individual’s total exposure is assumed to be attributed to consuming fish/shellfish and drinking water) to ensure protection of individuals whose exposure could be greater than indicated by current data and to account for unknown sources of exposure beyond consumption of aquatic organisms and water. In the EPA’s 2015 national updated 304(a) recommendations and final federal rule for Washington, the EPA applied a pollutant-specific RSC value of 0.8 or less for all non-carcinogens and nonlinear carcinogens.<sup>65</sup>

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<sup>60</sup> Partial Disapproval TSD at 16.

<sup>61</sup> Partial Disapproval TSD at 25.

<sup>62</sup> Partial Disapproval TSD at 18.

<sup>63</sup> Ecology submittal 55

<sup>64</sup> USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 822-B-00-004. Page 4-8.

<sup>65</sup> *Final Updated Ambient Water Quality Criteria for the Protection of Human Health*, (80 FR 36986, June 29, 2015); *Revision of Certain Water Quality Criteria Applicable to Washington*, (81 FR 85417, 85427-28, November 28, 2016). See also: USEPA. 2015. Final 2015 Updated National Recommended Human Health Criteria. U.S.

Ecology derived HHC using an RSC value of 1 (i.e., 100 percent of an individual's total exposure is assumed to be attributed to consuming fish/shellfish and drinking water). The HHC in the NTR were also based on an RSC of 1.<sup>66</sup> The RSC is one component of the exposure analysis that informs how stringent HHC must be to protect the designated uses. As Ecology explained in its rationale, the EPA's RSC recommendations provide two default approaches: 1) if no sources of exposure other than fish and water consumption are identified, the EPA recommends a default RSC of 0.2 (i.e., 20% of an individual's exposure is from surface waters and 80% of the exposure is from other sources); and 2) if other sources of exposure are well known and documented, the EPA recommends a default RSC of 0.8 (80% of exposure is from surface waters and 20% is from other sources).<sup>67</sup> Ecology's rationale further explained, "as the contribution of a contaminant from water sources becomes smaller, the HHC becomes more stringent and in effect becomes a larger driver for more restrictive limits."<sup>68</sup>

Ecology also explained that, "[t]he use of an RSC to compensate for sources of exposure outside the scope of the Clean Water Act when establishing HHC is a risk management decision that states need to carefully weigh."<sup>69</sup> Ecology noted the limited ability of the CWA, and therefore the State, to control exposure to pollutant sources outside of its regulation of water quality. Ecology ultimately concluded that its HHC water quality standards should be based on human exposure through CWA regulated sources, such as surface waters.<sup>70</sup>

In its Response to Comment document developed during its HHC rulemaking, Ecology explained the balancing it undertook during its process to select inputs that would be protective of the designated uses:

Ecology made decisions on the rule based on an extensive public process, federal and state laws and regulations, and with consideration of state and federal policy and guidance. Some of the choices made by Ecology are associated with an increased level of protection (stringency) such as the FCR, the risk level, toxicity factors, and drinking water intake. Some are associated with decreased protection, such as the relative source contribution. It is incorrect to infer that any one input defines the level of protection or stringency of a criterion.<sup>71</sup>

Finally, Ecology linked its selected FCR inputs to the HHC equations (which includes all fish and shellfish, regardless of source) with its selected RSC and explained its risk management decision as follows:

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Environmental Protection Agency, Office of Water, Washington, D.C. <https://www.epa.gov/wqc/human-health-water-quality-criteria>.

<sup>66</sup> Ecology Rationale at 36.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* at 38.

<sup>71</sup> Ecology Response to Comment at 98.

The decision to include 100% salmon (although many salmon put on most biomass outside waters regulated under the CWA) is a risk management decision that adds additional protection to the criteria beyond the levels recommended in EPA guidance (EPA 2000 guidance (page 4-26) states “EPA recommends the...use of fresh/estuarine species data only”), and offsets other inputs to the equation where risk management choices were made that are less stringent than EPA’s guidance (e.g. use of a RSC = 1). This decision (whether perceived as overly protective or appropriately protective) is part of the process of balancing the inputs to the equation to result in human health criteria that are protective of people who consume fish and shellfish from Washington waters.<sup>72</sup>

The EPA previously disagreed that Ecology’s rationale was sufficient and explained that the EPA recommends a ceiling RSC of 0.8 “to ensure protection of individuals whose exposure could be greater than indicated by current data and to account for unknown sources of exposure.”<sup>73</sup> The EPA’s partial disapproval also explained that the EPA’s 2015 304(a) criteria and the EPA’s final federal HHC for Washington include pollutant-specific RSC values.<sup>74</sup> The EPA did note that because Ecology included anadromous fish in its FCR, the EPA guidance would allow Ecology to “adjust the RSC upward to reflect that marine exposures are already accounted for in the FCR,” but the EPA determined that Ecology had not sufficiently justified departing from the EPA guidance to use the RSC range of 0.2-0.8.<sup>75</sup> The EPA explained that its final federal HHC for Washington retained RSC values of 0.5 and above “recognizing the compelling need to account for the other potential exposure sources, including marine fish not accounted for in the FCR of 175 g/day, consistent with the logic and procedures used in establishing the national 304(a) criteria recommendations.”<sup>76</sup>

Upon reconsideration, the EPA should have evaluated the use of the RSC in context with the overall HHC package. Although the partial disapproval referenced a compelling need for the RSC identified in its 304(a) recommendation, the EPA did not identify the compelling need for that conservative measure in Washington, given the other conservative elements Ecology used to derive its HHC, including the FCR of 175 g/day or the cancer risk level of  $10^{-6}$ . The EPA’s partial disapproval did not appear to address Ecology’s concern that the RSC creates overly conservative assumptions that account for non-CWA exposure risks. Rather, the EPA summarily concluded that “Ecology did not demonstrate how its selection of a RSC value of 1 to derive human health criteria is scientifically defensible and protective of the applicable designated uses.”<sup>77</sup> Finally, the EPA’s partial disapproval appears to treat the 304(a) recommendation to use an RSC range of 0.2-0.8 as a requirement, and then cites to the EPA’s Frequently Asked Questions document to allow the State flexibility to adjust the RSC upward under certain circumstances.<sup>78</sup> As noted above, 304(a) recommendations are not requirements; similarly, an EPA Frequently Asked Questions document does not have the force or effect of law.

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<sup>72</sup> Ecology Response to Comment at 23.

<sup>73</sup> Partial Disapproval TSD at 17-18.

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*, citing an EPA Frequently Asked Questions Document.

<sup>76</sup> *Id.*

<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

The EPA now concludes that Ecology's use of an RSC of 1, coupled with other more conservative inputs in the HHC equations, appropriately balanced risks and resulted in HHC that are based on sound science and are protective of Washington's designated uses, consistent with the rationale provided in Ecology's submittal.

#### *G. Drinking Water Intake*

The EPA's 2015 updated national 304(a) recommended HHC use a default drinking water intake rate of 2.4 liters per day (L/day). The EPA's default drinking water intake rate of 2.4 L/day represents the per capita estimate of combined direct and indirect community water ingestion at the 90th percentile for adults ages 21 and older.<sup>79</sup> Although the EPA uses these default values to calculate national 304(a) recommended HHC, the EPA's 2000 Methodology notes a preference for the use of local data to calculate HHC (e.g., locally derived FCRs, drinking water intake rates, body weights, and waterbody-specific bioaccumulation rates) over national default values, where data are sufficient to do so, to better represent local conditions.<sup>80</sup>

Ecology derived HHC using a drinking water intake rate of 2.4 L/day. Ecology's selection of a drinking water intake rate of 2.4 L/day to derive human health criteria is consistent with the EPA's 2015 national 304(a) recommendations.<sup>81</sup>

#### *H. Body Weight*

The EPA calculates HHC using a default body weight of 80 kilograms (kg), the average weight of a U.S. adult age 21 and older, based on NHANES data from 1999 to 2006.<sup>82</sup> Although the EPA uses these default values to calculate national 304(a) recommended HHC, the EPA's 2000 Methodology notes a preference for the use of local data to calculate human health criteria (e.g., locally derived FCRs, drinking water intake rates, body weights, and waterbody-specific bioaccumulation rates) over national default values, where data are sufficient to do so, to better represent local conditions.<sup>83</sup>

Ecology derived HHC using a body weight assumption of 80 kg based on new science and local data relevant to Washington and the EPA's 2011 Exposure Factors Handbook.<sup>84</sup> Ecology's selection of a body weight of 80 kg to derive HHC is consistent with the EPA's 2015 304(a) recommendations.

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<sup>79</sup> Exposure Factors Handbook 2011 edition, U.S. Environmental Protection Agency, EPA 600/R-090/052F (Sept. 30, 2011). Available at <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>

<sup>80</sup> EPA's 2000 Human Health Methodology, pp. 2-2, 2-10

<sup>81</sup> 80 Fed. Reg. 36,986 (Jun. 29, 2015) Final Updated Ambient Water Quality Criteria for the Protection of Human Health. In this final rule, EPA recommended criteria that accounted for a revised drinking water intake of 2.4 L/day based on the Exposure Factors Handbook: 2011 Edition, U.S. Environmental Protection Agency, Office of Research and Development, EPA 600/R-090/052F (Sept. 2011). Available at <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>

<sup>82</sup> 80 Fed. Reg. 36,986 (Jun. 29, 2015), *Final Updated Ambient Water Quality Criteria for the Protection of Human Health*, <https://www.gpo.gov/fdsys/pkg/FR-2015-06-29/html/2015-15912.htm>.

<sup>83</sup> EPA's 2000 Human Health Methodology, pp. 2-2, 2-10

<sup>84</sup> Exposure Factors Handbook: 2011 Edition, U.S. Environmental Protection Agency, Office of Research and Development, EPA 600/R-090/052F (Sept. 2011). Available at <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>

### *I. Polychlorinated Biphenyls (PCBs)*

The EPA's national recommended 304(a) HHC for PCBs is 0.000064 µg/L for both water + organisms and organisms only. This national recommendation (published in 2002) is based on a FCR of 17.5 g/day and was not updated in 2015. In its November 15, 2016 action, the EPA disapproved Ecology's HHC for PCBs. Ecology adopted HHC that were the same as those that the EPA promulgated in the NTR (as revised in 1999): 0.00017 µg/L for both water + organisms and organisms only. Ecology elected to use a cancer risk level of  $4 \times 10^{-5}$  for PCBs, consistent with the level of risk/hazard used by the Washington Department of Health in developing fish advisories. Ecology explained that this was a chemical-specific State risk management decision. When Ecology used the  $4 \times 10^{-5}$  cancer risk level along with its other inputs to calculate PCB criteria, the resulting criteria of 0.00029 µg/L were less stringent than the 1999 NTR values. Ecology then decided not to increase the criteria concentrations above the NTR value, and thus adopted the NTR value of 0.00017 µg/L. This value is associated with a cancer risk level of  $2.3 \times 10^{-5}$ .<sup>85</sup>

The EPA disapproved Ecology's PCB HHC because the State used a chemical-specific cancer risk rate. In its partial disapproval, the EPA determined that Ecology did not demonstrate how the selected cancer risk rate was based on scientific rationale or protective of designated uses, and the EPA therefore concluded that the PCB criteria did not comply with CWA section 303(c) and 40 CFR 131.11.<sup>86</sup> The EPA also noted in its partial disapproval that "Ecology did not demonstrate how the criteria were protective of applicable designated use, including the tribal subsistence fishing portion of the fish and shellfish harvesting use as informed by treaty-reserved rights."<sup>87</sup> The EPA asserted that Ecology could remedy the partial disapproval by not using a chemical-specific cancer risk level. The EPA specifically recommended Ecology use a  $10^{-6}$  cancer risk level to derive PCB criteria that are protective of designated uses, including the tribal subsistence fishing use as informed by treaty-reserved fishing rights.<sup>88</sup>

Prior to and following the EPA promulgation of federal HHC for Washington, the State has held meetings with stakeholders and regulated entities to discuss implementation options in National Pollutant Discharge Elimination System permits. In these meetings, Ecology has acknowledged that its permitted facilities will be unable to meet effluent limits based on the federal HHC, including the federal criteria for PCBs. Ecology's implementation plan relies on variances for permits that require PCB limits, and seeking EPA approval for those variances before any permits can be issued or reissued. Ecology does not expect to issue any permits for PCBs until at least 2021.

Upon reconsideration, the EPA concludes the chemical-specific cancer risk rate of  $2.3 \times 10^{-5}$  falls within the range of protective risk rates the EPA has recommended since it issued its 2000 Methodology and is protective of the State's designated uses, consistent with the rationale provided in Ecology's submittal. Nothing in the CWA prevents or prohibits a state from adopting

<sup>85</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Page 67. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>86</sup> Partial Disapproval TSD at 26.

<sup>87</sup> *Id.*

<sup>88</sup> *Id.* As discussed further below, Ecology does not interpret its designated uses to specifically target subsistence fishing based on reserved tribal treaty rights.

a chemical-specific cancer risk rate, as long as the derived criteria are based on sound scientific rationale and protective of the designated use. As discussed further below, the EPA has also reconsidered its reliance on tribal treaty rights as a rationale for disapproving Ecology's HHC for PCBs.

#### *J. Arsenic*

The EPA's national recommended default HHC for arsenic are 0.018 µg/L for water + organisms and 0.14 µg/L organisms only. This national recommendation (published in 1992) is based on a FCR of 6.5 g/day and was not updated in the EPA's 2015 national 304(a) HHC recommendations. The EPA's IRIS program is currently undertaking a toxicological review of inorganic arsenic<sup>89</sup> that could result in the EPA updating its national 304(a) recommended HHC for arsenic.

Ecology adopted HHC of 10 µg/L for arsenic for water + organisms and organisms only. These criteria are equivalent to the Safe Drinking Water Act (SDWA) maximum contaminant level (MCL) that applies in Washington for drinking water protection. Ecology stated this decision was based on scientific information, regulatory precedent by other states in adopting, and the EPA in approving as protective, a HHC of 10 µg/L for arsenic. Ecology also noted there are high concentrations of naturally occurring arsenic in Washington.<sup>90</sup>

In its November 15, 2016 action, the EPA determined that Washington's arsenic criteria for the protection of human health from exposure to arsenic were not protective of Washington's designated uses, and therefore, did not comply with CWA section 303(c) and 40 CFR 131.11. Given the scientific uncertainty surrounding arsenic, the EPA did not promulgate a new federal criterion for arsenic, and instead elected to leave the existing criteria from the NTR (0.018 µg/L water + organisms and 0.14 µg/L organisms only) in effect for CWA purposes in Washington.

Upon reconsideration, the EPA reaffirms its November 15, 2016 decision to leave the existing NTR values in place. The NTR was promulgated in 1992 and Ecology's submission did not provide a compelling rationale for departing from that level of protection. The EPA is therefore leaving in place the existing NTR values of 0.018 µg/L water + organisms and 0.14 µg/L organisms only.

#### *K. Thallium and 2,3,7,8-TCDD (Dioxin)*

The EPA's national recommended 304(a) HHC for thallium (published in 2003) are based on an IRIS RfD from 1990. The EPA's national recommended HHC for dioxin (published in 2002) are based on a cancer slope factor from 1988. The existing national recommended 304(a) HHC for both thallium and dioxin are derived using a FCR of 17.5 g/day. The EPA did not update the

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<sup>89</sup> USEPA. 2015. Assessment Development Plan for the Integrated Risk Information System (IRIS) Toxicological Review of Inorganic Arsenic [CASRN 7440-38-2]. Office of Research and Development. EPA/630/R-14/101. Available at: [http://ofmpub.epa.gov/eims/eimscoum.getfile?p\\_download\\_id=526109](http://ofmpub.epa.gov/eims/eimscoum.getfile?p_download_id=526109).

<sup>90</sup> Department of Ecology. Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment. August 2016. Ecology Publication no. 16-10-025. Page 70. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

304(a) national recommended criteria for these two pollutants in 2015 because further analysis was necessary to develop scientifically sound recommendations.<sup>91</sup>

For thallium, Ecology used the EPA's existing 304(a) recommendations along with the State's selected FCR of 175 g/day and adopted criteria of 0.24 µg/L for water + organisms and 0.27 µg/L for organisms only. For dioxin, Ecology used the most recent IRIS non-cancer RfD (2012<sup>92</sup>) to calculate and adopt criteria of 0.000000064 µg/L for water + organisms and 0.000000064 µg/L for organisms only for dioxin. For both pollutants, Ecology used an RSC value of 1.

Due to scientific uncertainty with the toxicity factors from IRIS, the EPA took no action on these criteria in 2016. Because the EPA took no action on Washington's adopted criteria and did not promulgate revised criteria for these pollutants, the existing thallium and dioxin criteria from the NTR remain in effect for CWA purposes in Washington.

Under the CWA, the EPA has an obligation to act on Ecology's HHC for thallium and dioxin. Because the EPA has reconsidered its position on Washington's use of an RSC of 1 (as explained above), and because Ecology used existing EPA data on the toxicity of thallium and dioxin (from either the EPA's 304(a) recommendations or IRIS values), along with the State's selected FCR of 175 g/day, the EPA concludes that Washington's HHC for these pollutants are scientifically defensible and protective of the State's designated uses, consistent with the rationale provided in Ecology's submittal. The EPA is therefore approving Ecology's prior submissions.

#### **IV. Tribal Treaty Rights and Washington's FCR and Cancer Risk Level**

As described in detail above, the EPA's 2000 Human Health Methodology and the EPA's 304(a) national recommended HHC provide a framework for states and authorized tribes to develop HHC that are protective of designated uses. In its August 1, 2016 HHC package, Ecology used a FCR of 175 g/day and a cancer risk rate of  $10^{-6}$  (and  $2.3 \times 10^{-5}$  for PCBs) to calculate its generally applicable HHC. Consistent with the 2000 Methodology, states and authorized tribes have discretion to make risk-management decisions in establishing HHC.<sup>93</sup> The FCR Ecology used is nearly eight times more protective than the EPA's national default FCR of 22 g/day and is based on local fish consumption information, consistent with the 2000 Methodology. Also consistent with the 2000 Methodology, Ecology determined that a cancer risk rate of  $10^{-6}$  (and  $2.3 \times 10^{-5}$  for PCBs) would be protective of the general population and high consuming subpopulations.

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<sup>91</sup> USEPA. 2015. EPA Response to Scientific Views from the Public on Draft Updated National Recommended Water Quality Criteria for the Protection of Human Health. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. <https://www.epa.gov/sites/production/files/2015-10/documents/epa-response-to-public-comments-to-human-health-final-criteria.pdf>.

<sup>92</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025. Page 43. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

<sup>93</sup> USEPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA 822-B-00-004.



After issuing a partial disapproval of Washington's HHC for the reasons described above, the EPA issued a final federal rule on November 28, 2016, that included a FCR of 175 g/day. The EPA's rationale for using the 175 g/day FCR differed from the State's rationale in using the same FCR in its August 2016 submittal. Specifically, the EPA explained that it interpreted Washington's "harvesting" designated use to include subsistence fishing, and the EPA asserted that tribes with treaty rights must be treated as the target general population for the purpose of deriving protective criteria (including selection of an appropriate FCR).<sup>94</sup> The EPA's interpretation was not consistent with Washington's interpretation of its designated use. Specifically, Washington asserted that "[t]he designated use of harvest in Washington's water quality standards is a general use, and the population it applies to encompasses all people harvesting from Washington surface waters (not just a category represented by highly exposed groups or sustenance users as the commenter asserts). . . . The current rule takes [i]nto account protection of fish and shellfish resources from toxics for all waters of the state, including the Usual and Accustomed [referring to applicable treaty terms] waters."<sup>95</sup>

The rationale the EPA articulated in the preamble to its federal HHC in support of the FCR and cancer risk rate selected for Washington was based on a new legal theory and framework within which the EPA and states would be required to adopt new approaches in order to "effectuate and harmonize" tribal reserved treaty rights with the CWA when establishing HHC.<sup>96</sup> Specifically, the EPA purported to harmonize applicable treaty language protecting tribes' right to fish with the CWA by concluding that the EPA and the State would need to provide the same level of protection to tribal treaty fishers as to the State's general population, in part by interpreting the State's designated uses to also mean or include subsistence fishing and identifying tribal populations as the "target general population."<sup>97</sup> This framework had not been promulgated in any nationally applicable rule or articulated in any national recommended guidance or the 2000 Methodology. The EPA did not provide the public with adequate notice of this framework or solicit public comments on the Agency's decision to apply this framework to particular state submissions in the first instance.

In important respects, this framework departed from longstanding EPA policy and the Agency's recommendations for setting HHC, including the 2000 Methodology. Because of this, the EPA has stated that the 2000 Methodology "does not . . . speak to or envision the unique situation of setting WQS [water quality standards] that cover areas where tribes have treaty-reserved rights to practice subsistence fishing."<sup>98</sup> While the 2000 Methodology did not explicitly address treaty-reserved fishing rights, the EPA was aware long before development of the 2000 Methodology

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<sup>94</sup> EPA, Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85,417, 85,424 (Nov. 28, 2016) ("EPA has interpreted the state's EPA-approved designated fish and shellfish harvesting use to include or encompass a subsistence component based on, and consistent with, the rights reserved to the tribes through the treaties.").

<sup>95</sup> WA Ecology, WAC 173-201A, Concise Explanatory Statement: Tribal Treaty Rights (August 2016).

<sup>96</sup> See *id.* at 85,422-426; EPA, Revision of Certain Federal Water Quality Criteria Applicable to Washington, 80 Fed. Reg. 55,063, 55,067 (Sept. 14, 2015).

<sup>97</sup> EPA, Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85,417, 85,424 (Nov. 28, 2016) ("EPA construes the CWA to require that, when establishing WQS for [waters where tribes have treaty-reserved fishing rights], the tribal members must be considered the target general population for the purposes of setting risk levels to protect the subsistence fishing use.").

<sup>98</sup> *Id.* at 85,424-85,425.

that certain tribal populations engaged in subsistence fishing practices and that tribal treaties contain subsistence fishing protections. Moreover, the 2000 Methodology speaks directly to “greater consumption among Native American, Pacific Asian American, and other subsistence consumers” and advises states to “ensure that the risk to more highly exposed subgroups (sportfishers or subsistence fishers) does not exceed the  $10^{-4}$  level.”<sup>99</sup>

The EPA’s rationale and new framework were largely immaterial to the EPA’s partial disapproval of Ecology’s HHC. However, it was among the reasons that led the EPA to disapprove Washington’s PCB criteria, based on the concern that criteria associated with a cancer risk level of  $2.3 \times 10^{-5}$  would not be consistent with the EPA’s new framework that required treaty-reserved tribal consumers to be treated as the “target general population” and protected at a cancer risk no greater than  $1 \times 10^{-5}$ .<sup>100</sup>

Upon reconsideration, the EPA has determined that the State’s cancer risk level of  $2.3 \times 10^{-5}$  for PCBs gives due effect to the tribal reserved treaty rights, and that the 2000 Methodology is the appropriate framework through which to assess protection of tribal members with such rights. First, the EPA’s longstanding view, consistent with the 2000 Methodology, is that a state may consider tribes with reserved fishing rights to be highly exposed populations, rather than the target general population, in order to derive criteria, and that such consideration gives due effect to reserved fishing rights. Second, the EPA believes it is permissible under the CWA for a state to choose to protect tribal members at a cancer risk level of at minimum  $10^{-4}$ , consistent with the EPA’s 2000 Methodology and protection afforded to other highly exposed subpopulations. Washington elected to be more protective of high consumers than necessary by selecting a FCR of 175 g/day and setting a cancer risk level of  $2.3 \times 10^{-5}$  for PCBs. The EPA’s statements to the contrary in its disapproval of the State’s PCB criteria departed from the Agency’s historic view of what risk levels would be adequately protective of high consumers and does not reflect the Agency’s longstanding (prior to 2015) or current view.<sup>101</sup>

While the reserved rights in these tribal treaties may be considered by the State and the EPA when setting and reviewing criteria, they do not expand the EPA’s authority under the CWA. Likewise, these treaties do not limit or prohibit the EPA from taking an otherwise lawful action under the CWA. Washington’s selection of a cancer risk level of  $2.3 \times 10^{-5}$  and an FCR of 175 g/day for its PCB criteria is consistent with the EPA’s 2000 Methodology. Washington’s decision to protect high consuming tribal members with PCB criteria based on a  $2.3 \times 10^{-5}$  CRL and an FCR of 175 g/day was more than adequate for this or other populations. Therefore, it was

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<sup>99</sup> See 2000 Methodology, pp. 1-12.

<sup>100</sup> November 15, 2016. Letter and enclosed Technical Support Document from Daniel D. Opalski, Director, Office of Water and Watersheds, EPA Region 10 to Maia Bellon, Director, Department of Ecology, Re: EPA’s Partial Approval/Disapproval of Washington’s Human Health Water Quality Criteria and Implementation Tools (“Ecology did not demonstrate how the criteria were derived using a cancer risk level that is based on scientifically sound rationale and protective of applicable designated uses, including the tribal subsistence fishing portion of the fish and shellfish harvesting use as informed by treaty-reserved fishing rights.”); Revision of Certain Water Quality Criteria Applicable to Washington, (81 FR 85417, 85427-28, November 28, 2016).

<sup>101</sup> For additional discussion and analysis of the EPA’s prior approach for considering tribal treaty rights in the water quality standards program, please see the EPA’s April 4, 2019 CWA 303(c) approval of Idaho’s human health criteria at [https://www.epa.gov/sites/production/files/2019-04/documents/04042019\\_cover\\_letter\\_approval\\_of\\_deq\\_human\\_health\\_criteria\\_signed.pdf](https://www.epa.gov/sites/production/files/2019-04/documents/04042019_cover_letter_approval_of_deq_human_health_criteria_signed.pdf).

improper and unnecessary for the EPA to disapprove the State's PCB criteria in order to "harmonize" the treaties and the CWA.

**V. The EPA's Reversal of the November 15, 2016 Clean Water Act Section 303(c) Partial Disapproval of Washington's Human Health Water Quality Criteria and Approval of Those Criteria**

Upon reconsideration of Ecology's 2016 submittal, the EPA is now reversing the majority of its November 15, 2016 partial disapproval of Washington's HHC and approving those HHC, and the associated footnotes. See the table below. For the reasons set forth above, the EPA finds that Ecology's HHC are based on sound science and are protective of the State's designated uses. In light of this decision, the Agency intends to initiate a notice and comment process on a separate proposal to withdraw the related federally promulgated HHC. Pursuant to 40 CFR 131.21(c) the EPA's approval of Washington's HHC will not be in effect for CWA purposes until the corresponding federally promulgated HHC are withdrawn.

The EPA recognizes that Ecology's HHC are less stringent than the EPA's federally promulgated criteria which are based on EPA's section 304(a) criteria. However, as explained above, the EPA's section 304(a) criteria are recommendations and states retain discretion to adopt different criteria, that may be less stringent, if the state's criteria are based on sound science and protect the designated use. In issuing this approval, the EPA has determined that, looking at the record and the State's approach as a whole, Ecology's HHC meet the requirements of EPA's regulations because their inputs are based on sound science and the resulting criteria protect the designated uses.

The EPA is therefore reversing the majority of the 2016 partial disapproval of Ecology's HHC and approving those HHC. In making this decision, the EPA also took into consideration that: 1) the CWA designates states as the primary authority for setting water quality standards; 2) the CWA envisions that states and authorized tribes will use their expertise and discretion in making resource- and risk-management decisions related to the protection of human health; 3) the 304(a) criteria are recommendations, not national mandates; 4) Ecology's 2016 HHC submittal included rationale sufficient to depart from the 304(a) national HHC recommendations, including conservative inputs into its HHC equations, and EPA should have deferred to Ecology and not substituted its judgment for the State's resource- and risk-management decisions; and 5) Ecology's regulatory processes were several years underway by the time the EPA finalized its updated national 304(a) recommendations in June 2015 and the CWA envisions the triennial review process as an opportunity for states to review and modify as appropriate their WQS based on the latest science and information.

			Washington's Criteria that the EPA Disapproved or Deferred Action on in 2016 that the EPA is Now Approving		EPA Federally Promulgated Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)	Water & Organisms (µg/L)	Organisms Only (µg/L)
1	1,1,1-Trichloroethane	71556	47000	160000	20000	50000
2	1,1,2,2-Tetrachloroethane	79345	0.12	0.46	0.1	0.3
3	1,1,2-Trichloroethane	79005	0.44	1.8	0.35	0.90
4	1,1-Dichloroethylene	75354	1200	4100	700	4000
5	1,2,4-Trichlorobenzene	120821	0.12	0.14	0.036	0.037
6	1,2-Dichlorobenzene	95501	2000	2500	700	800
7	1,2-Dichloroethane	107062	9.3	120	8.9	73
8	1,2-Dichloropropane	78875				
9	1,2-Diphenylhydrazine	122667	0.015	0.023	0.01	0.02
10	1,2-Trans-Dichloroethylene	156605	600	5800	200	1000
11	1,3-Dichlorobenzene	541731	13	16	2	2
12	1,3-Dichloropropene	542756	0.24	2.0	0.22	1.2
13	1,4-Dichlorobenzene	106467	460	580	200	200
14	2,3,7,8-TCDD (Dioxin)	1746016	0.000000064	0.000000064	0.000000013	0.000000014
15	2,4,6-Trichlorophenol	88062				
16	2,4-Dichlorophenol	120832	25	34	10	10
17	2,4-Dimethylphenol	105679				
18	2,4-Dinitrophenol	51285	60	610	30	100
19	2,4-Dinitrotoluene	121142				
20	2-Chloronaphthalene	91587	170	180	100	100
21	2-Chlorophenol	95578				
22	2-Methyl-4,6-Dinitrophenol	534521	7.1	25	3	7
23	3,3'-Dichlorobenzidine	91941				
24	3-Methyl-4-Chlorophenol	59507				

			Washington's Criteria that the EPA Disapproved or Deferred Action on in 2016 that the EPA is Now Approving		EPA Federally Promulgated Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)	Water & Organisms (µg/L)	Organisms Only (µg/L)
25	4,4'-DDD	72548	0.000036	0.000036	0.0000079	0.0000079
26	4,4'-DDE	72559	0.000051	0.000051	0.00000088	0.00000088
27	4,4'-DDT	50293	0.000025	0.000025	0.0000012	0.0000012
28	Acenaphthene	83329	110	110	30	30
29	Acrolein	107028				
30	Acrylonitrile	107131				
31	Aldrin	309002	0.0000057	0.0000058	0.000000041	0.000000041
32	alpha-BHC	319846	0.0005	0.00056	0.000048	0.000048
33	alpha-Endosulfan	959988	9.7	10	6	7
34	Anthracene	120127	3100	4600	100	100
35	Antimony	7440360	12	180	6	90
36	Arsenic	7440382			0.018	0.14
37	Asbestos	1332214				
38	Benzene	71432				
39	Benzidine	92875				
40	Benzo(a) Anthracene	56553	0.014	0.021	0.00016	0.00016
41	Benzo(a) Pyrene	50328	0.0014	0.0021	0.000016	0.000016
42	Benzo(b) Fluoranthene	205992	0.014	0.021	0.00016	0.00016
43	Benzo(k) Fluoranthene	207089	0.014	0.21	0.0016	0.0016
44	beta-BHC	319857	0.0018	0.002	0.0013	0.0014
45	beta-Endosulfan	33213659				
46	Bis(2-Chloroethyl) Ether	111444				
47	*Bis(2-Chloro-1-Methylethyl) Ether	108601	(Not submitted)	(Not submitted)	400	900

			Washington's Criteria that the EPA Disapproved or Deferred Action on in 2016 that the EPA is Now Approving		EPA Federally Promulgated Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)	Water & Organisms (µg/L)	Organisms Only (µg/L)
48	Bis(2-Ethylhexyl) Phthalate	117817	0.23	0.25	0.045	0.046
49	Bromoform	75252	5.8	27	4.6	12
50	Butylbenzyl Phthalate	85687	0.56	0.58	0.013	0.013
51	Carbon Tetrachloride	56235				
52	Chlordane	57749	0.000093	0.000093	0.000022	0.000022
53	Chlorobenzene	108907	380	890	100	200
54	Chlorodibromomethane	124481	0.65	3	0.60	2.2
55	Chloroform	67663	260	1200	100	600
56	Chrysene	218019	1.4	2.1	0.016	0.016
57	Copper	7440508				
58	Cyanide <sup>D</sup>	57125	19	270	9	100
59	Dibenzo(a,h) Anthracene	53703	0.0014	0.0021	0.000016	0.000016
60	Dichlorobromomethane	75274	0.77	3.6	0.73	2.8
61	Dieldrin	60571	0.0000061	0.0000061	0.000000070	0.000000070
62	Diethyl Phthalate	84662	4200	5000	200	200
63	Dimethyl Phthalate	131113	92000	130000	600	600
64	Di-n-Butyl Phthalate	84742	450	510	8	8
65	Endosulfan Sulfate	1031078	9.7		9	
66	Endrin	72208	0.034	0.035	0.002	0.002
67	Endrin Aldehyde	7421934				
68	Ethylbenzene	100414	200	270	29	31
69	Fluoranthene	206440	16	16	6	6
70	Fluorene	86737	420	610	10	10
71	Gamma-BHC; Lindane	58899	15	17	0.43	0.43

			Washington's Criteria that the EPA Disapproved or Deferred Action on in 2016 that the EPA is Now Approving		EPA Federally Promulgated Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)	Water & Organisms (µg/L)	Organisms Only (µg/L)
72	Heptachlor	76448	0.0000099	0.00001	0.00000034	0.00000034
73	Heptachlor Epoxide	1024573	0.0000074	0.0000074	0.0000024	0.0000024
74	Hexachlorobenzene	118741	0.000051	0.000052	0.0000050	0.0000050
75	Hexachlorobutadiene	87683	0.69	4.1	0.01	0.01
76	Hexachlorocyclopentadiene	77474	150	630	1	1
77	Hexachloroethane	67721	0.11	0.13	0.02	0.02
78	Indeno(1,2,3-cd) Pyrene	193395	0.014	0.021	0.00016	0.00016
79	Isophorone	78591				
80	Methyl Bromide	74839	520		300	
81	Methylene Chloride	75092	16	250	10	100
82	Methylmercury	22967926	(Not submitted)	(Not submitted)		0.03
83	Nickel	7440020	150	190	80	100
84	Nitrobenzene	98953	55	320	30	100
85	N-Nitrosodimethylamine	62759				
86	N-Nitrosodi-n-Propylamine	621647				
87	N-Nitrosodiphenylamine	86306				
88	Pentachlorophenol (PCP)	87865	0.046	0.1	0.002	0.002
89	Phenol	108952	18000	200000	9000	70000
90	Polychlorinated Biphenyls (PCBs) <sup>E</sup>	PCB	0.00017	0.00017	0.000007	0.000007
91	Pyrene	129000	310	460	8	8
92	Selenium	7782492	120	480	60	200
93	Tetrachloroethylene	127184	4.9	7.1	2.4	2.9

			Washington's Criteria that the EPA Disapproved or Deferred Action on in 2016 that the EPA is Now Approving		EPA Federally Promulgated Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)	Water & Organisms (µg/L)	Organisms Only (µg/L)
94	Thallium	7440280	0.24	0.27	1.7	6.3
95	Toluene	108883	180	410	72	130
96	Toxaphene	8001352				
97	Trichloroethylene	79016	0.38	0.86	0.3	0.7
98	Vinyl Chloride	75014		0.26		0.18
99	Zinc	7440666	2300	2900	1000	1000

\* Bis(2-Chloro-1-Methylethyl) Ether was previously listed as Bis(2-Chloroisopropyl) Ether.

Footnotes for human health criteria in Table 240 (WAC 173-201A-240):

- D. This recommended water quality criterion is expressed as total cyanide, even though the integrated risk information system RFD used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme conditions than refluxing with sulfuric acid to liberate the CN-moiety. Thus, these complex cyanides are expected to have little or no "bioavailability" to humans. If a substantial fraction of the cyanide present in a water body is present in a complexed form (e.g.,  $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ ), this criterion may be overly conservative.
- E. This criterion applies to total PCBs, (e.g., the sum of all congener or all isomer or homolog or Aroclor analyses). The PCBs criteria were calculated using a chemical-specific risk level of  $4 \times 10^{-5}$ . Because that calculation resulted in a higher (less protective) concentration than the current criterion concentration (40 C.F.R. 131.36) the state made a chemical-specific decision to stay at the current criterion concentration.





Message

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**From:** Shaw, Hanh [Shaw.Hanh@epa.gov]  
**Sent:** 8/6/2018 2:26:49 PM  
**To:** mgil461@ECY.WA.GOV  
**CC:** Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]; Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** Washington Human Health Criteria Petition  
**Attachments:** 18-000-9628 WA WQS Petition signed.pdf

Melissa, per my voice message on Friday, attached is the EPA's response to the petition.

---

Hanh Shaw | Manager  
Water Quality Standards Unit  
Office of Water and Watersheds  
U.S. Environmental Protection Agency | Region 10  
**P:** 206-553-0171 | **E:** [shaw.hanh@epa.gov](mailto:shaw.hanh@epa.gov)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

AUG 03 2018

OFFICE OF WATER

Ms. Penny Shamblin  
Counsel for Utility Water Act Group  
Hunton & Williams LLP  
Riverfront Plaza, East Tower  
51 East Byrd Street  
Richmond, Virginia 23219

Re: Petition for Reconsideration of the Environmental Protection Agency's (EPA) Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools submitted by the State of Washington on August 1, 2016, and Repeal of the Final Rule Revision of Certain Federal Water Quality Standards Applicable to Washington, 81 Fed. Reg. 85,417 (Nov. 28, 2016)

Dear Ms. Shamblin:

This letter concerns your petition dated February 21, 2017 to the U.S. Environmental Protection Agency requesting reconsideration of the EPA's partial disapproval of Washington's human health water quality criteria and implementation tools submitted by the State of Washington on August 1, 2016 and either repeal or withdrawal of the EPA's final rule titled "Revision of Certain Water Quality Standards Applicable to Washington," 81 FR 85417 (November 28, 2016).

After reviewing your petition, the Agency has decided to reconsider the EPA actions referenced in the petition. The Agency intends to move forward with its reconsideration as expeditiously as possible. At the conclusion of the Agency's reconsideration, we will provide a response to your petition setting forth our decisions whether to grant or deny the specific requests in the petition.

Should the EPA decide to conduct a rulemaking to amend any part of the federal rule, the EPA would provide an opportunity for notice and comment.

If you have any questions regarding the reconsideration process, please contact Sara Hisel-McCoy at (202) 566-1649.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Ross".

David P. Ross  
Assistant Administrator

Message

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**From:** Guzzo, Lindsay [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8643D3D6703A4886B13C5548D22307A0-GUZZO, LINDSAY]  
**Sent:** 4/27/2017 8:19:42 PM  
**To:** Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]  
**Subject:** RE: In person meeting with EPA and Ecology

Should now be updated. Thanks!

*Lindsay Guzzo*

**Lindsay Guzzo**  
US EPA  
Office of Water and Watersheds  
Water Quality Standards Unit (OWW-191)  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101

phone: 206-553-0268  
fax: 206-553-1280  
[guzzo.lindsay@epa.gov](mailto:guzzo.lindsay@epa.gov)

---

**From:** Brown, Chad (ECY) [mailto:CHBR461@ECY.WA.GOV]  
**Sent:** Thursday, April 27, 2017 1:06 PM  
**To:** Guzzo, Lindsay <Guzzo.Lindsay@epa.gov>  
**Subject:** RE: In person meeting with EPA and Ecology

Lindsay... we fixed the room issue... Can you update this meeting to also be in room **2B-18**. Thanks

-----Original Appointment-----

**From:** Guzzo, Lindsay [mailto:[Guzzo.Lindsay@epa.gov](mailto:Guzzo.Lindsay@epa.gov)]  
**Sent:** Thursday, April 27, 2017 7:47 AM  
**To:** Guzzo, Lindsay; Brown, Chad (ECY); Gildersleeve, Melissa (ECY); Chung, Angela; Szelag, Matthew  
**Cc:** Braley, Susan (ECY); Niemi, Cheryl (ECY); Finch, Bryson (ECY); Conklin, Becca (ECY); Snouwaert, Elaine (ECY)  
**Subject:** In person meeting with EPA and Ecology  
**When:** Friday, April 28, 2017 12:00 PM-2:00 PM (UTC-08:00) Pacific Time (US & Canada).  
**Where:** Lacey Room 3F-08

**Room 3F-08**

Time set aside to meet in person and discuss work going on in WA WQS. We are looking to leave Seattle at about 10:45, and hope to make it by 12:00. If traffic is not good we will update you on our journey. I look forward to meeting everyone!

**Work involving WQS in the state of Washington:**

-Temperature work (Columbia River and others)

- What is happening with the temperature TMDL litigation?
- Any update on Oregon temperature criteria BiOp RPA – Identifying cold water refugia?
- NCC workgroup for R10

-PPA – Check in on the following agreed upon activities:

- Rec Criteria development
- DO / Sediment Criteria development
- Triennial review / 5 year plan

-Human Health Criteria implementation

-Spokane Mayor discussion

-Spokane taskforce

-Water Quality Assessment Listing methodology for HHC/tissue (Matt/Chad)

-Total dissolved gas (Chad)

-Tribal TAS and updated WQS

-Progress Update on UAA work in Washington (Cheryl/Elaine)

-Variance webinars for R10 states (starting this summer)

**NWEA litigation meeting:**

-Background on litigation (Angela)

-NWEA petition on toxics (Human health and aquatic life)

-Potential revisions to the Natural Conditions Criteria update

## Appointment

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**From:** Guzzo, Lindsay [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8643D3D6703A4886B13C5548D22307A0-GUZZO, LINDSAY]  
**Sent:** 4/27/2017 8:14:39 PM  
**To:** Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]; Gildersleeve, Melissa (ECY) [mgil461@ECY.WA.GOV]; Chung, Angela [Chung.Angela@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**CC:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]; Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]; Finch, Bryson (ECY) [bfin461@ECY.WA.GOV]; Conklin, Becca (ECY) [bcon461@ECY.WA.GOV]; Snouwaert, Elaine (ECY) [ESNO461@ECY.WA.GOV]  
**Subject:** In person meeting with EPA and Ecology  
**Location:** Lacey Room 2B-18  
**Start:** 4/28/2017 7:00:00 PM  
**End:** 4/28/2017 9:00:00 PM  
**Show Time As:** Tentative

### Room 2B-18

Time set aside to meet in person and discuss work going on in WA WQS. We are looking to leave Seattle at about 10:45, and hope to make it by 12:00. If traffic is not good we will update you on our journey. I look forward to meeting everyone!

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-NWEA petition on toxics (Human health and aquatic life)

-Potential revisions to the Natural Conditions Criteria update

## Appointment

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**From:** Guzzo, Lindsay [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8643D3D6703A4886B13C5548D22307A0-GUZZO, LINDSAY]  
**Sent:** 4/27/2017 2:46:40 PM  
**To:** Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]; mgil461@ECY.WA.GOV; Chung, Angela [Chung.Angela@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**CC:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]; cnie461@ecy.wa.gov; Finch, Bryson (ECY) [bfin461@ECY.WA.GOV]; Conklin, Becca (ECY) [bcon461@ECY.WA.GOV]; Snouwaert, Elaine (ECY) [ESNO461@ECY.WA.GOV]  
**Subject:** In person meeting with EPA and Ecology  
**Location:** Lacey Room 3F-08  
  
**Start:** 4/28/2017 7:00:00 PM  
**End:** 4/28/2017 9:00:00 PM  
**Show Time As:** Tentative

### Room 3F-08

Time set aside to meet in person and discuss work going on in WA WQS. We are looking to leave Seattle at about 10:45, and hope to make it by 12:00. If traffic is not good we will update you on our journey. I look forward to meeting everyone!

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-Background on litigation (Angela)

-NWEA petition on toxics (Human health and aquatic life)

-Potential revisions to the Natural Conditions Criteria update

Message

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**From:** Guzzo, Lindsay [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8643D3D6703A4886B13C5548D22307A0-GUZZO, LINDSAY]  
**Sent:** 5/8/2019 6:35:04 PM  
**To:** Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]  
**Subject:** FW: EPA Action Regarding Washington's Human Health Water Quality Criteria (3 of 3)  
**Attachments:** NWIFC EPA Action Regarding Washington's Human Health Water Quality Criteria Letter 5.3.19.pdf; ATT00001.txt

*Lindsay Guzzo*

**Lindsay Guzzo**  
US EPA  
Office of Water and Watersheds  
Water Quality Standards Unit (OWW-191)  
1200 Sixth Avenue, Suite 155  
Seattle, WA 98101

phone: 206-553-0268  
fax: 206-553-1280  
[guzzo.lindsay@epa.gov](mailto:guzzo.lindsay@epa.gov)

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**From:** Shaw, Hanh  
**Sent:** Tuesday, May 07, 2019 12:48 PM  
**To:** Edmondson, Lucy <Edmondson.Lucy@epa.gov>; Guzzo, Lindsay <Guzzo.Lindsay@epa.gov>; Fidis, Alexander <Fidis.Alexander@epa.gov>  
**Subject:** FW: EPA Action Regarding Washington's Human Health Water Quality Criteria (3 of 3)

FYI.

---

**From:** Fleisig, Erica  
**Sent:** Sunday, May 05, 2019 1:51 PM  
**To:** Szelag, Matthew <Szelag.Matthew@epa.gov>; Shaw, Hanh <Shaw.Hanh@epa.gov>; Buffo, Corey <Buffo.Corey@epa.gov>; Hisel-McCoy, Sara <Hisel-McCoy.Sara@epa.gov>; Reed, Khesha <Reed.Khesha@epa.gov>; Nagle, Deborah <Nagle.Deborah@epa.gov>; Opalski, Dan <Opalski.Dan@epa.gov>  
**Cc:** McRae, Evelyn <McRae.Evelyn@epa.gov>  
**Subject:** FW: EPA Action Regarding Washington's Human Health Water Quality Criteria (3 of 3)

I received this letter from the Northwest Indian Fisheries Commission 3 times but as far as I can tell the emails and attachments are identical, so I'm only forwarding one. It's only 2 pages plus a list of references, but here's a quick summary of the major points:

- Concern that since public comment and tribal consultation will only be a part of Step 2 (the rule withdrawal step, which comes after the substantive decision to approve WA's criteria upon reconsideration (Step 1)), EPA will reject any input as "outside the scope" at that stage. NWIFC cites to how we responded to similar comments on the Florida nutrients rule withdrawal as evidence that we will consider their comments out of scope.
- Notes that "it is not clear that EPA has the authority to take the actions it envisions regarding Washington's human health water quality criteria."



- Notes that “it is difficult to imagine how any substantive EPA action in Step 1, deprived of the information to be obtained via tribal consultation and public comment, can be reasoned or scientifically defensible” and cites to the existing record and additional documents that are being sent via flash drive.

-Erica

**From:** Admin, Clerical <incominggf@nwifc.org>

**Sent:** Friday, May 3, 2019 1:18 PM

**To:** Wheeler, Andrew <wheeler.andrew@epa.gov>; Ross, David P <ross.davidp@epa.gov>

**Cc:** Hladick.christopher@epamail.epa.gov; Fleisig, Erica <Fleisig.Erica@epa.gov>; Justin Parker <jparker@nwifc.org>

**Subject:** EPA Action Regarding Washington's Human Health Water Quality Criteria (3 of 3)

Dear Messrs. Wheeler and Ross,

Attached please find the enclosed letter from NWIFC Executive Director Justin R. Parker regarding EPA action regarding Washington's Human Health Water Quality Criteria, including attached documents needed to assist you with any decisions or actions EPA takes in this regard. Please feel free to contact us with any comments or questions.

Thanks,

NWIFC

cc:

Chris Hladick, EPA Region 10 Administrator

Erica Fleisig, EPA Office of Water, Standards, and Health Protection Div.

--

**Clerical**

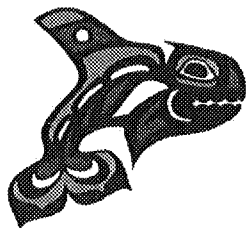
**Northwest Indian Fisheries Commission**

**6730 Martin Way East**

**Olympia, WA 98516-5540**

**360-438-1180 main line**

**360-753-8659 fax line**



# Northwest Indian Fisheries Commission

6730 Martin Way E., Olympia, Washington 98516-5540

Phone (360) 438-1180

www.nwifc.org

FAX # 753-8659

May 3, 2019

Hon. Andrew Wheeler, Administrator  
U.S. Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Ave, NW  
Washington, D.C. 20460

Mr. David Ross, Assistant Administrator  
U.S. Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Ave, NW  
Washington, D.C. 20460

Re: EPA Action Regarding Washington's Human Health Water Quality Criteria

Dear Messrs. Wheeler and Ross:

On April 17, 2019, the member tribes of the Northwest Indian Fisheries Commission (NWIFC)<sup>1</sup> received a letter from EPA Region X, inviting them to "an informational conference call with the agency regarding its reconsideration of the Nov. 15, 2016 Clean Water Act section 303(c) partial disapproval of the human health criteria submitted by the Washington Department of Ecology."<sup>2</sup> The invitation offered "two same-content calls" to be held just days later, on April 24 and 25, 2019, and stated that "the purpose of this informational call is to provide an update on the agency's decision-making related to the reconsideration."<sup>3</sup>

During each call, tribal participants stated for the record – and Regional Administrator Chris Hladick confirmed – that these informational calls did not constitute, and were not a substitute for, formal consultation with individual tribes. The EPA participants on the call stated that they were not able to provide details regarding the purported legal or factual basis for any pending EPA action regarding Washington's human health water quality criteria. However, the EPA participants did say that EPA did not intend to provide opportunities for either tribal consultation on or public input to EPA's substantive decision-making process regarding a potential alteration to the human health criteria currently effective in Washington, which we will refer to as "Step 1."<sup>4</sup> Rather, the EPA participants indicated that public comment would

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<sup>1</sup> The NWIFC member tribes are the Lummi, Nooksack, Swinomish, Upper Skagit, Sauk-Suiattle, Stillaguamish, Tulalip, Muckleshoot, Puyallup, Nisqually, Squaxin Island, Skokomish, Suquamish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Makah, Quileute, Quinault, and Hoh.

<sup>2</sup> Letter from Daniel D. Opalski, Director, Water Division, EPA Region X, to Tribal Chairs (April 17, 2019).

<sup>3</sup> *Id.*

<sup>4</sup> Curiously, EPA acknowledges that it must "ensure meaningful and timely input by tribal officials in the development of policies that have tribal implications." Letter from EPA Regional Administrator Chris Hladick, on behalf of Acting EPA Administrator Andrew Wheeler, to NWIFC Chair Lorraine Loomis RE: Federal Trust and Consultation Obligations (Feb. 8, 2019) (citing Exec. Or. 13175, 65 Fed. Reg. 67249 (Nov. 9, 2000)). This EPA letter also acknowledges the Agency's obligations for meaningful and timely consultation pursuant to internal EPA

only be solicited as part of an after-the-fact, "Step 2," rulemaking to withdraw federal standards applicable to Washington, presumably because the federal standards would no longer be necessary after Step 1. Because any deliberation on EPA's underlying substantive decision in Step 1 will have already taken place, there is a concern that any tribal consultation or public input on its basis or rationale could be rejected by EPA as being "outside the scope" of its Step 2 rulemaking action.<sup>5</sup>

First, it is not clear that EPA has the authority to take the actions it envisions regarding Washington's human health water quality criteria. Second, and without conceding EPA authority to take any particular action, it is difficult to imagine how any substantive EPA action in Step 1, deprived of the information to be obtained via tribal consultation and public comment, can be reasoned or scientifically defensible.<sup>6</sup> NWIFC refers you to and herein incorporates, at a minimum, the documents referenced in Appendix A and submitted to EPA via USB drive along with this letter (with zip file via email); the EPA proposed and final rules at, respectively, 80 Fed. Reg. 55063 (Sept. 14, 2015) and 81 Fed. Reg. 85417 (Nov. 28, 2016), and their supporting technical and other documents; and all materials comprising Docket EPA-HQ-OW-2015-0174.<sup>7</sup>

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policies. See *id.* (citing EPA Policy on Consultation and Coordination with Indian Tribes (May 4, 2011)). EPA's acknowledgement of its consultation obligations is exceptionally curious because EPA continues to refuse to engage affected tribes in meaningful and timely sovereign-to-sovereign consultation, even upon reasonable requests by NWIFC. See Letter from NWIFC Chair Lorraine Loomis to Assistant EPA Administrator David Ross (Sept. 11, 2018) (requesting "full and timely consultation with individual tribal governments . . . prior to any decision or action"); Letter from NWIFC Chair Lorraine Loomis to Acting EPA Administrator Andrew Wheeler (January 25, 2019) (reminding EPA of the "necessity to undertake formal consultation with tribal governments, not merely to notify tribes of actions to be taken"). Any decision by EPA to modify Washington's human health water quality criteria presents a policy development with tribal implications covered by Executive Order 13175. Tribal consultation that occurs only after an EPA decision to modify Washington's human health water quality criteria, for example, consultation only after a Step 1 decision, is neither meaningful nor timely.

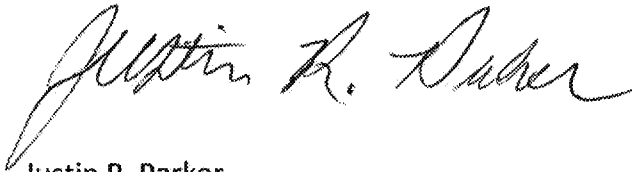
<sup>5</sup> See, e.g., U.S. Environmental Protection Agency, Water Quality Standards for the State of Florida's Lakes and Flowing Waters; Withdrawal, 79 Fed. Reg. 57447, 57449 (Sept. 25, 2014) ("These comments are directed at whether EPA should have reached the decisions that serve, in part, as the basis for EPA withdrawing its federal water quality standards in Florida.... Since these comments address EPA's underlying decisions, rather than whether EPA should withdraw its federal standards in light of those decisions, the comments are outside the scope of this action and, therefore, EPA did not address them.")

<sup>6</sup> See, e.g., the numerous recent scientific developments since the EPA last sought and accepted tribal or public input relevant to water quality criteria applicable to Washington, including those referenced in Appendix A.

<sup>7</sup> Pertinent materials in the federal rulemaking Docket include, but are not limited to: Washington Department of Ecology, Concise Explanatory Statement: Appendix D, Chapter 173-201A WAC - Water Quality Standards for Surface Waters of the State of Washington, Copies of written comments (August 2016) EPA-HQ-OW-2015-0174-0426; NWIFC comments on the Washington Department of Ecology 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington State Water Quality Standards (April 20, 2016) EPA-HQ-OW-2015-0174-0437; The Suquamish Tribe, Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region (August 2000) EPA-HQ-OW-2015-0174-0410; Oregon Dept. of Environmental Quality, Human Health Focus Group Report Oregon Fish and Shellfish Consumption Rate Project (June 2008) EPA-HQ-OW-2015-0174-0404; Kelly A. Toy, et al., A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region (October, 1996) EPA-HQ-OW-2015-0174-0412; Lummi Natural Resources Department,

Please feel free to contact us with any comments or questions regarding the above-referenced materials, which should be considered and included in any decision making record regarding Washington's human health water quality criteria.

Sincerely,

A handwritten signature in black ink, reading "Justin R. Parker". The signature is fluid and cursive, with the first name "Justin" being more prominent than the last name "Parker".

Justin R. Parker  
Executive Director

Enclosure – Appendix A and listed materials

cc: Chris Hladick, Regional Administrator, EPA Region X  
Erica Fleisig, Standards and Health Protection Division, Office of Water Headquarters, EPA

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Lummi Nation Seafood Consumption Study (2012) EPA-HQ-OW-2015-0174-0387; National Environmental Justice Advisory Council, Fish Consumption and Environmental Justice (2002) EPA-HQ-OW-2015-0174-0293; U.S. Environmental Protection Agency, Working Effectively with Tribal Governments: Resource Guide (Aug. 1998); EPA-HQ-OW-2015-0174-0304; U.S. Environmental Protection Agency, Commemorating the 30th Anniversary of the EPA's Indian Policy, Memorandum from Gina McCarthy to All EPA Employees, 1 (Dec. 1, 2014) EPA-HQ-OW-2015-0174-0309; U.S. Environmental Protection Agency, EPA Policy on Consultation and Coordination with Indian Tribes: Guidance for Discussing Tribal Treaty Rights (Feb., 2016) EPA-HQ-OW-2015-0174-0337.

**Appendix A****Documents Submitted Following EPA Informational Calls April 24-25, 2019**

1. James E. West, et al., *Time Trends of Persistent Organic Pollutants in Benthic and Pelagic Indicator Fishes from Puget Sound, Washington*, 73 ARCHIVES OF ENVIRONMENTAL CONTAMINATION & TOXICOLOGY 207 (2017)
2. Robert C. Lacy, et al., *Evaluating Anthropogenic Threats to Endangered Killer Whales to Inform Effective Recovery Plans*, 7 SCIENTIFIC REPORTS 14119 (2017)
3. Teresa Mongillo, et al., NOAA Technical Memorandum, NMFS-NWFSC-135, *Exposure to a Mixture of Toxic Chemicals: Implications for the Health of Endangered Southern Resident Killer Whales* (2016)
4. Andrea Carey, et al., *Toxic Contaminants Pose a Threat to Early Marine Survival of Chinook Salmon from Puget Sound*, in PUGET SOUND ESTUARY MONITORY PROGRAM, 2016 SALISH SEA TOXICS MONITORING SYNTHESIS: A SELECTION OF RESEARCH (2017)
5. PUGET SOUND ESTUARY MONITORING PROGRAM, 2018 SALISH SEA TOXICS MONITORING SYNTHESIS: A SELECTION OF RESEARCH (2019)
6. Jessica I. Lundin, et al., *Legacy Habitat Contamination as a Limiting Factor for Chinook Salmon Recovery in the Willamette Basin, Oregon, USA*, 14 PLoS ONE e0214399 <https://doi.org/10.1371/journal.pone.0214399> (2019)
7. KING COUNTY, WASHINGTON, AN EVALUATION OF THE POTENTIAL IMPACTS OF CHEMICAL CONTAMINATION TO CHINOOK SALMON IN THE GREEN-DUWAMISH WATERSHED (2018)
8. Catherine A. O'Neill, *Exposed: Asking the Wrong Question in Risk Regulation*, 48 ARIZONA STATE LAW JOURNAL 703 (2016)
9. NATIONAL TRIBAL TOXICS COUNCIL, UNDERSTANDING TRIBAL EXPOSURES TO TOXICS (2015)
10. Sandra M. O'Neill, et al., Washington Department of Fish & Wildlife and NOAA, *Toxic Contaminants in Juvenile Chinook Salmon (*Oncorhynchus tshawytscha*) Migrating Through Estuary, Nearshore and Offshore Habitats of Puget Sound* (2015)
11. Letter from Lorraine Loomis, Chairperson, Northwest Indian Fisheries Commission, to Scott Pruitt, Administrator, U.S. Environmental Protection Agency (July 10, 2017)

12. Letter from Maia D. Bellon, Director, Washington State Department of Ecology, to David Ross, Acting Administrator, U.S. Environmental Protection Agency (Aug. 7, 2018)
13. Department of Ecology News Release, "Ecology Objects to EPA's Attempt to Roll Back Clean Water Rule in Washington," (April 10, 2019)
14. U.S. Environmental Protection Agency, Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, 65 Fed. Reg. 66443 (Nov. 3, 2000)
15. U.S. Environmental Protection Agency, Region X, Framework for Selecting and Using Tribal Fish and Shellfish Consumption Rates for Risk-Based Decision Making at CERCLA and RCRA Cleanup Sites for Puget Sound and the Strait of Georgia (Aug., 2007)
16. U.S. Environmental Protection Agency, Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions (2013)
17. *Washington v. U.S.*, 584 U.S. \_\_\_, 138 S. Ct. 1832 per curiam (June, 2018)
18. *U.S. v. Washington*, 853 F.3d 946 (9<sup>th</sup> Cir., 2017)
19. *Northwest Environmental Advocates v. U.S. Environmental Protection Agency*, Complaint for Declaratory and Injunctive Relief, No 2:17-cv-00263, U.S. District Court for the Western District of Washington (Feb. 21, 2017)
20. Letter from Michael H. Shapiro, Acting Assistant Administrator, U.S. Environmental Protection Agency, to Nina Bell, Executive Director, Northwest Environmental Advocates, (May 31, 2017)

Message

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**From:** Schwartz, Jerry [Jerry\_Schwartz@afandpa.org]  
**Sent:** 5/3/2017 3:37:51 PM  
**To:** Washington, Evelyn [Washington.Evelyn@epa.gov]  
**CC:** Hisel-McCoy, Sara [Hisel-McCoy.Sara@epa.gov]; Southerland, Elizabeth [Southerland.Elizabeth@epa.gov]  
**Subject:** Re: Follow-up on request for list for petitions

Got it. Thanks for checking.

Jerry Schwartz  
AF&PA

Sent from my iPhone

On May 3, 2017, at 10:41 AM, Washington, Evelyn <Washington.Evelyn@epa.gov> wrote:

Yes, I confirmed that we do have the IDEQ letter, but it's not a petition under sections 553 or 555 of the Administrative Procedure Act like these others. Rather, this is asking EPA to take action under CWA section 303(c).

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**From:** Washington, Evelyn  
**Sent:** Thursday, April 27, 2017 3:18 PM  
**To:** 'Schwartz, Jerry' <Jerry\_Schwartz@afandpa.org>  
**Cc:** Hisel-McCoy, Sara <Hisel-McCoy.Sara@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>  
**Subject:** RE: Follow-up on request for list for petitions

Let me check.

---

**From:** Schwartz, Jerry [mailto:Jerry\_Schwartz@afandpa.org]  
**Sent:** Thursday, April 27, 2017 2:23 PM  
**To:** Washington, Evelyn <Washington.Evelyn@epa.gov>  
**Cc:** Hisel-McCoy, Sara <Hisel-McCoy.Sara@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>  
**Subject:** RE: Follow-up on request for list for petitions

All,

Sorry for the multiple emails. It occurs to me that you already have the IDEQ letter, but it is not in your official "formal petition" list. Can you confirm you do have the IDEA letter as an informal request? Thank you, Jerry

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**From:** Schwartz, Jerry  
**Sent:** Thursday, April 27, 2017 2:18 PM  
**To:** 'Washington, Evelyn' <Washington.Evelyn@epa.gov>  
**Cc:** Hisel-McCoy, Sara <Hisel-McCoy.Sara@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>  
**Subject:** RE: Follow-up on request for list for petitions

Thank you Evelyn,

I know that the head of the Idaho DEQ also has sent the Administrator a letter asking that he approve the water quality criteria that the state submitted after it completed its stakeholder process.

I will see if I can get a copy sent to all of you as well. Thanks again. Jerry

**From:** Washington, Evelyn [<mailto:Washington.Evelyn@epa.gov>]  
**Sent:** Wednesday, April 26, 2017 4:30 PM  
**To:** Schwartz, Jerry <[Jerry\\_Schwartz@afandpa.org](mailto:Jerry_Schwartz@afandpa.org)>  
**Cc:** Hisel-McCoy, Sara <[Hisel-McCoy.Sara@epa.gov](mailto:Hisel-McCoy.Sara@epa.gov)>; Southerland, Elizabeth <[Southerland.Elizabeth@epa.gov](mailto:Southerland.Elizabeth@epa.gov)>  
**Subject:** Follow-up on request for list for petitions

At the OW Coffee with Industry earlier this month, Betsy Southerland mentioned 13 petitions in OST and you phoned Sara Hisel-McCoy seeking this list.

There is an official list on the [epa.gov](https://www.epa.gov/aboutepa/petitions-office-water) webpage (<https://www.epa.gov/aboutepa/petitions-office-water>) that is updated periodically but only includes what are clearly formal petitions to the agency and does not include other requests that have come in as letters that we, in OW, have also called "petitions," possibly wrongly.

In the table below is the list of 9 that have come in as letter requests. There are 3 additional OST ones on the attached screenshot of today's webpage -- two on the Steam Electric ELG Rule, one on conductivity. There are also 2 others in the Drinking Water Program listed. These account for the 13 that Betsy mentioned at that meeting and the additional one, the 2<sup>nd</sup> one on the Steam Electric Rule, was filed the week following the meeting where this was discussed.

Let me, Sara or Betsy know if you have any questions.

Evelyn Washington  
Associate Director  
Standards and Health Protection Division  
Phone 202-566-0591 -- Fax 202-566-0409

Issue	Petitioner(s)	Unreasonable Delay Suit Filed?
<a href="#">ME HHC (rule and state action)</a>	1. <!--[if !supportLists]--><!--[endif]-->Maine (2/27/17) 2. <!--[if !supportLists]--><!--[endif]-->Pierce Atwood, representing the town of Baileyville ME, Verso Corp, and Woodland Pulp LLC (3/6/17)	N
<a href="#">FL HHC</a>	Florida Clean Water Network (David Ludder)	Y (12/28/16)
<a href="#">AL HHC (plus some ALC)</a>	Florida Clean Water Network (David Ludder)	N
<a href="#">MN NNC</a>	Center for Regulatory Reasonableness (John Hall)	N
<a href="#">AR Coffee Creek and Mossy Lake</a>	Tulane Environmental Law Clinic (on behalf of Ouachita Riverkeeper)	N (draft lawsuit sent to EPA on 12/15/16)
<a href="#">IA Antideg</a>	Iowa	N
<a href="#">WA HHC (rule and state action)</a>	Pulp and Paper groups	N
<a href="#">WA ALC (plus arsenic, dioxin and thallium)</a>	Northwest Environmental Advocates (Nina Bell)	Y (2/21/17)
<a href="#">AK HHC</a>	1. <!--[if !supportLists]--><!--[endif]-->Southeast Alaska Conservation Council and Inside Passage Waterkeeper (11/12/15) 2. <!--[if !supportLists]--><!--[endif]-->Chickaloon Village Traditional Council (12/16/15)	N



Message

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**From:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]  
**Sent:** 4/13/2017 11:50:59 PM  
**To:** Braley, Susan (ECY) [SUBR461@ECY.WA.GOV]  
**Subject:** March 30 WQ Assessment Meeting Notes

To those interested in Washington's Water Quality Assessment and Policy 1-11 updates:

On March 30, 2017 we held a public meeting/webinar to discuss human health criteria in the Water Quality Assessment. We have compiled notes from that meeting, and have also drafted a follow-up memo on the use of Category 4B (has a pollutant control program) for PCB impaired waters. This idea was discussed at the end of the March 30 meeting as a way to control PCBs through means other than a TMDL. These two documents are now available on our website:

- [March 30 meeting notes](#)
- [Memo Summarizing Notes on using Category 4B for PCBs](#)

The March 30 meeting concluded the series of public dialogue meetings that were held from November 2016 through March 2017 to discuss key issues identified through a [scoping process](#) on Water Quality Policy 1-11. Ecology will now begin to make revisions to Policy 1-11 based on feedback, suggestions, and ideas that can be reasonably carried out. It is Ecology's goal to have a revised Policy 1-11 draft ready for public review in Spring 2017. All materials related to this public dialogue process can be found on Ecology's website at: <http://www.ecy.wa.gov/programs/wq/303d/proposed/index.html>.

Thanks to everyone who participated in this public dialogue process for the Water Quality Assessment and updates to Policy 1-11. We appreciate the amount of time and scrutiny many of you were able to give to these key issues related to Washington's Water Quality Assessment.

Susan Braley  
*Watershed Management Section*  
*Phone: (360) 407-6414*  
*email: [susan.braley@ecy.wa.gov](mailto:susan.braley@ecy.wa.gov)*

Message

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**From:** Peck, Sandi (ECY) [spec461@ECY.WA.GOV]  
**Sent:** 11/15/2016 6:03:25 PM  
**To:** MacIntyre, Mark [Macintyre.Mark@epa.gov]  
**Subject:** RE: Today's Release Text....(links are not updated yet)

Thank you!

Mark, please let me know when it's officially released. Working on finishing touches of our statement. I'll share with you when it's ready.

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**From:** MacIntyre, Mark [mailto:Macintyre.Mark@epa.gov]  
**Sent:** Tuesday, November 15, 2016 8:59 AM  
**To:** Peck, Sandi (ECY) <spec461@ECY.WA.GOV>  
**Subject:** Today's Release Text....(links are not updated yet)

## EPA News Release

**Contact:** Mark MacIntyre 206-553-7302(desk), **Personal Phone / Ex. 6** [macintyre.mark@epa.gov](mailto:macintyre.mark@epa.gov)

### EPA updates standards for toxic pollutants in Washington waters

*Partnership with Washington will improve water quality and protect fish consumers, regulatory flexibility will help control costs*

**(Seattle – November 15, 2016)** Today the U.S. Environmental Protection Agency announced actions to update the limits for toxic pollutants in Washington's surface waters, which will protect water quality and people who eat fish from those waters.

The Clean Water Act sets clear expectations for the nation's water quality and calls for establishing health-based standards using the best available science to ensure that all people can safely fish and swim in U.S. waters. Today's actions set standards aimed at protecting those who eat salmon and other fish and shellfish from Washington waters.

Specifically, EPA approved 45 of the pollution standards the Washington Department of Ecology adopted earlier this year and finalized updates to 144 additional federal standards. For a complete list of the pollutants addressed in this action go to: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington#fed>

As part of today's actions, EPA also approved Ecology's revisions to its variance and compliance schedule provisions, which give the state and affected industries and municipalities needed flexibility and time to implement these new standards while making reasonable progress in improving water quality.

"Washington maintains one of the strongest water programs in the entire nation," said EPA Regional Administrator Dennis McLerran. "Now, the state will have updated standards on the books and the needed flexibility to make progress meeting these more protective standards over time."

Surveys of local residents in the Pacific Northwest, including tribes with treaty-protected rights, reflect that Washingtonians eat fish and shellfish at levels much higher than the rate that was previously used to set standards for toxics in Washington's waters. EPA and Ecology have been working to establish these new water quality standards based on a far more realistic estimate of the amount of fish Washingtonians eat.

"We applaud the Governor and Ecology's decision to increase the fish consumption rate recognized in the standards and to retain the state's protective one-in-a-million cancer risk level. The fish consumption rate and risk level in the

standards match those established in Oregon and clearly recognize that greater protection of people who eat larger amounts of fish is appropriate in the Pacific Northwest where fishing is a part of our heritage,” McLerran said.

Most of Washington's human health standards for toxics in surface water haven't been updated since 1992. This new set of standards is based on the latest science about health protection and fish consumption rates. Today's actions ensure that water quality standards are now in place at levels that will adequately protect fish consumers in Washington, including tribes with treaty-protected rights, from exposure to toxic pollutants.

The region's tribes helped both the EPA and the state better understand the particular health risks that tribal members have long faced due to their consumption of large amounts of fish. In establishing a fish consumption rate that better reflects the amount of fish people eat, the Ecology and EPA standards will help to lower health risks from eating fish for all Washingtonians, even those, such as tribal members, who regularly consume large amounts of fish and shellfish. EPA's final rule incorporates Washington's 175 grams per day fish consumption rate and a one-in-one million cancer risk level.

In practice, Ecology and EPA will continue to work together to determine the right level of regulatory flexibility and the feasibility of meeting the new standards when incorporating the new pollution limits into state permits and in other Clean Water Act programs. Flexibility in implementing these new standards will be important as pollutant detection and control technologies are developed.

EPA's rule and Washington's approved water quality standards will take effect 30 days after publication of the rule in the Federal Register. The rule was signed today (November 15) and is expected to be published in the Federal Register in one to two weeks.

# # #

For more information about EPA's action on Washington's water quality standards: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington#fed>.

**Mark A. MacIntyre**  
**Senior Communications Officer**  
**U.S. Environmental Protection Agency - Region 10**  
**1200 Sixth Ave. Suite 900**  
**Seattle, WA 98101**  
**(desk) 206-553-7302**  
**Personal Phone / Ex. 6**  
[macintyre.mark@epa.gov](mailto:macintyre.mark@epa.gov)



Message

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**From:** Nagle, Deborah [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=33888A2BBE8F48AEB4AD9CC54259FB4E-DNAGLE]  
**Sent:** 8/10/2018 10:34:12 PM  
**BCC:** jstuhlmiller@wsfb.com; GaryC@awb.org; jeff\_miller@treated-wood.org; tmielke@greaterspokane.org; chris@nwpulpandpaper.org; jerry\_schwartz@afandpa.org; dallin@wwpi.org; Hisel-McCoy, Sara (Hisel-McCoy.Sara@epa.gov) [Hisel-McCoy.Sara@epa.gov]; Reed, Khesha [Reed.Khesha@epa.gov]; Campbell, Ann [Campbell.Ann@epa.gov]  
**Subject:** Copy of the Washington Petition Response  
**Attachments:** OW-18-000-9628 Signed Response.pdf

On August 3, 2018, a letter responding to the petition for reconsideration of the EPA's partial disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools was finalized. Inadvertently, the letter from David Ross, Assistant Administrator of the Office of Water, was only sent to Penny Shamblin. Identical letters should have been sent to all petitioners. I apologize for the mistake. I have attached the signed letter for your information.

Feel free to contact me or Sara Hisel-McCoy, as indicated in the attached letter, if you have any questions.

Sincerely,  
Deborah G. Nagle

Deborah G. Nagle, Acting Director  
Office of Science and Technology  
1200 Pennsylvania Ave, NW  
Washington, DC 20460  
Tel: (202) 564-1185

Message

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**From:** Opalski, Dan [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=8B5ED6410D934BF699A008A252791A55-OPALSKI, DAN]  
**Sent:** 11/15/2016 8:03:26 PM  
**To:** ksus461@ecy.wa.gov; Bartlett, Heather (ECY) [heba461@ECY.WA.GOV]; maib461@ecy.wa.gov; mgil461@ECY.WA.GOV  
**CC:** McLerran, Dennis [mclerran.dennis@epa.gov]; Angela Chung [Chung.Angela@epa.gov]  
**Subject:** WA Human Health Criteria  
**Attachments:** EPA's Partial ApprovalPartial Disapproval\_WA HH WQC\_Impl Tools\_Bellon It....pdf; Washington rule\_WQS Part 131 2040 AF56 Final Rule FRN\_20161024\_webpostin....pdf

Dear Ecology Partners:

We appreciate Ecology's leadership, hard work and partnership on the important task of updating Washington's human health water quality criteria and implementation tools. The effort and thoughtful engagement by Ecology staff over the last several years has been nothing short of remarkable. Attached is EPA's final Clean Water Act decision on Ecology's August 1, 2016 submittal of new and revised water quality standards. I've also attached EPA's final federal rule, which Administrator McCarthy signed today. Both decision documents and the docket for the federal rule will be available on EPA's website by tomorrow morning. The website is: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington#fed>

As we've discussed recently, bringing resolution to Washington's human health criteria is a significant accomplishment that further establishes the state of Washington's leadership in water quality protection. We recognize that there is much more work to do to ensure that the standards can be implemented in a reasonable manner, and we are committed to working through those issues with Ecology over time.

Thank you again sincerely for the quality of the work and your partnership.

Dan Opalski  
Director  
Office of Water and Watersheds  
U.S. Environmental Protection Agency, Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
206-553-1855  
FAX: 206-553-1280

Message

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**From:** Green, Jennifer [jgreen@nwifc.org]  
**Sent:** 7/14/2017 4:23:29 PM  
**To:** Pruitt, Scott [Pruitt.Scott@epa.gov]  
**CC:** craig.alexander@usdoj.gov; paul\_a\_winters@omb.eop.gov; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Maia Bellon [maib461@ecy.wa.gov]; (Group) Chairman [chairman@nwifc.org]; Catherine O'Neill [coneill@nwifc.org]; Parker, Justin [jparker@nwifc.org]; Lorraine Loomis [lloomis@skagitcoop.org]; fwilshus@nwifc.org; Clerical Admin [Chron@nwifc.org]  
**Subject:** Re: Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal WQ Criteria Applicable to WA, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.  
**Attachments:** NWIFC Petition Response July 10, 2017.pdf

Good Morning,

The initial letter that was sent out had 2 copies of the first page. I have attached a copy with the second page removed, no other changes have been made to this document.

Thank you.

On Mon, Jul 10, 2017 at 3:54 PM, Green, Jennifer <jgreen@nwifc.org> wrote:

Attached is a letter from Lorraine Loomis the Northwest Indian Fisheries Commission Chairperson regarding a **Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal Water Quality Criteria Applicable to Washington, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.** as well as the enclosure.

If you have any questions please contact Fran Wilshusen at 360-438-1180 or by email at fwilshus@nwifc.org.

Thank you.

--

**Jennifer Green**  
**Clerical Lead**  
**NWIFC**  
**6730 Martin Way E**  
**Olympia, WA 98516**  
**360-438-1180 Main Line**  
**360-528-4358 Direct Line**  
**360-753-8659 Fax Line**  
**jgreen@nwifc.org**



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**Jennifer Green**  
**Clerical Lead**

**NWIFC**

**6730 Martin Way E**

**Olympia, WA 98516**

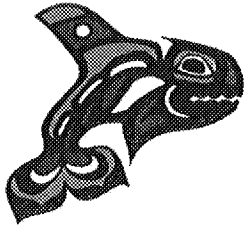
**360-438-1180 Main Line**

**360-528-4358 Direct Line**

**360-753-8659 Fax Line**

**[jgreen@nwifc.org](mailto:jgreen@nwifc.org)**





# Northwest Indian Fisheries Commission

6730 Martin Way E., Olympia, Washington 98516-5540  
Phone (360) 438-1180

www.nwifc.org

FAX # 753-8659

July 10, 2017

The Honorable Scott Pruitt  
U.S. Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington, DC 20460

**Re: Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal Water Quality Criteria Applicable to Washington, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.**

Dear Administrator Pruitt:

The Northwest Indian Fisheries Commission (NWIFC)<sup>1</sup> respectfully requests that EPA deny the above-referenced Petition to Reconsider its Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools, and to repeal its Final Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85417 (Nov. 28, 2016) (Petition), submitted under 5 U.S.C. § 533(e).<sup>2</sup> EPA's rule was the culmination of years of extensive public process at the state and federal levels involving a broad array of stakeholders. The resulting human health criteria (HHC) for Washington are scientifically based and legally defensible. They are accompanied by a suite of implementation tools, which provide generous timelines for compliance and other mechanisms for flexibility in achieving the updated water quality standards (WQS). Notably, the State of Washington itself is not seeking to disturb the EPA rule. As Washington State Department of Ecology Director Maia Bellon explained, the state is not asking EPA to revisit its rule because reconsideration "didn't seem like a good use of our time ... we want to focus our time on

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<sup>1</sup> The NWIFC member tribes are the Lummi, Nooksack, Swinomish, Upper Skagit, Sauk-Suiattle, Stillaguamish, Tulalip, Muckleshoot, Puyallup, Nisqually, Squaxin Island, Skokomish, Suquamish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Makah, Quileute, Quinault, and Hoh, each of which holds fishing, hunting, and gathering rights in fresh and marine waters in western Washington, reserved in the 1854 and 1855 Stevens Treaties. NWIFC governing documents approved by each of the sovereign member tribes authorize NWIFC to prepare and submit these comments.

<sup>2</sup> Northwest Pulp & Paper Association, et al., Petition to Reconsider its Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools, and to Repeal its Final Revision of Certain Federal Water Quality Criteria Applicable to Washington (Feb. 21, 2017) [hereinafter Petition].



making sure our ... NPDES permit holders ... are going to meet those standards into the future.”<sup>3</sup> EPA, too, should devote its time and resources to more fruitful efforts.

The Petition, moreover, largely rehashes arguments that have already been thoroughly vetted in public processes and carefully considered by EPA. EPA provided its reasons for accepting or rejecting these arguments, as appropriate, and documented its analysis in a voluminous record. Neither the science nor the law has changed. There is thus no warrant for EPA to reconsider its rule, as any new rulemaking that is grounded in the science would produce the same outcome.

Instead of moving backward and revisiting the rule, the EPA should allow the state and its local partners here in Washington – including the tribes – to move forward, and focus on innovative and effective implementation.

#### **I. The EPA Supported the State’s Effort to Update its Water Quality Standards, but Must Itself Uphold the Clean Water Act**

Both the state and the EPA have legal obligations under the Clean Water Act (CWA) as they work together to achieve its objective “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”<sup>4</sup> EPA provided technical and other support throughout the state of Washington’s effort to revise its outdated water quality standards, seeking to facilitate a state process that would result in approvable WQS. Contrary to the Petition’s characterization, the EPA’s relationship with the state has been one of support and deference, even as the state’s update was repeatedly delayed. However, the EPA could no longer ignore its own obligations under the CWA and was ultimately compelled by court order to act.

The CWA envisions frequent updates to state water quality standards, directing states at least every three years to review and, as appropriate, revise their WQS.<sup>5</sup> The CWA sets forth the touchstone for state efforts to this end: “[s]uch standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter.”<sup>6</sup> Among those purposes, the CWA sets forth a national goal of “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water.”<sup>7</sup>

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<sup>3</sup> *Inside Olympia with Ecology Director Maia D. Bellon*, Inside Olympia (May 25, 2017) <https://www.tvw.org/watch/?clientID=9375922947&eventID=2017051094&eventID=2017051094&autoStartStream=true>.

<sup>4</sup> Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1251(a).

<sup>5</sup> 33 U.S.C. § 1313(c)(1). The CWA authorizes both states and tribes to administer WQS for waters under their respective jurisdictions. However, because these comments address a state’s (Washington’s) failure to submit fully approvable WQS and EPA’s issuance of certain human health criteria for that state, they will refer throughout to the duties of “states” under the CWA.

<sup>6</sup> 33 U.S.C. § 1313(c)(2).

<sup>7</sup> 33 U.S.C. § 1251(a)(2).

The EPA has interpreted this goal of “fishable” uses to “include, at a minimum, designated uses providing for the protection of aquatic communities and human health related to consumption of fish and shellfish.”<sup>8</sup> States may opt, however, to adopt more protective designated “uses” for their waters.

Under the CWA, water quality standards include HHC. These are health-based standards: at Congress’ direction, the touchstone for HHC is human health (rather than, for example, technological feasibility or cost-benefit balancing).<sup>9</sup> Because fish are the primary route of human exposure to PCBs, mercury, dioxins, and a host of toxic chemicals that are harmful to human health, HHC are set to ensure that people can safely consume fish, without also being exposed to contaminants in harmful amounts.

Pursuant to EPA guidance, agencies enlist quantitative risk assessment methods to set standards for both threshold and non-threshold contaminants. For threshold contaminants, standards are set so that contaminants don’t exceed levels that are safe for humans. For non-threshold contaminants, including carcinogens, exposure to any non-zero amount has the potential to cause cancer; standards are set so that contaminants don’t exceed a risk level determined to be “acceptable.” In either case, agencies then work with a risk assessment equation to calculate the concentration of each chemical that will be permitted in the waters that support fish. Agency risk assessors consider the toxicity of each contaminant together with human characteristics and practices that expose people to the contaminant in their environment: how much fish will people eat, over how long a period, and at what bodyweight? The fish consumption rate (FCR) is a key variable in this equation. For carcinogens, the cancer risk level deemed “acceptable” is another key variable.

The CWA enlists both states and the EPA in furthering its goals, in a relationship of “cooperative federalism.” CWA §304(a) directs EPA to assist states by requiring EPA to develop, publish, and revise from time to time, “criteria for water quality accurately reflecting the latest scientific knowledge [ ] on the kind and extent of all identifiable effects on health and welfare.”<sup>10</sup> For their part, states must “adopt criteria for all toxic pollutants ... for which [§304(a)] criteria have been published” by EPA whenever states review or revise their water quality standards or adopt new standards.<sup>11</sup> Importantly, the CWA gives EPA broad authority to oversee state efforts to this end, requiring states to submit WQS to EPA for approval or disapproval, and requiring EPA to issue WQS

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<sup>8</sup> Proposed Revision of Certain Federal Water Quality Criteria Applicable to Washington, 80 Fed. Reg. 55063, 55064 (Sept. 14, 2015); 40 C.F.R. § 131.2, § 131.4 (unless a state or tribe demonstrates that this use is not attainable, by means of a “use attainability analysis” pursuant to 40 C.F.R. § 131.10(j)).

<sup>9</sup> See, e.g., Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Environmental Standards* 89 N.Y.U. L. REV. 1184, 1190 (2014) (“The major U.S. environmental statutes contain three principal approaches for determining the stringency of environmental protection: cost-benefit standards, feasibility standards, and health-based standards”).

<sup>10</sup> 33 U.S.C. § 1314(a)(1).

<sup>11</sup> 33 U.S.C. § 1313(c)(2)(B).

for a state if the state fails to make the necessary changes to obtain approval within the statutorily specified window.<sup>12</sup> In addition to working with states to develop water quality standards, the CWA independently directs EPA to issue water quality standards itself on states' behalf "in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of [the CWA]."<sup>13</sup>

Congress' impatience with the slow pace of states' work to control toxic contamination was well documented during the debate surrounding the 1987 amendments to the CWA; the resulting provisions for regular triennial revisions to state WQS reflect this concern.<sup>14</sup> Nonetheless, Washington failed to produce state WQS in the wake of the 1987 amendments, necessitating that its waters obtain coverage under the National Toxics Rule (NTR), which EPA was forced to promulgate in 1992 for those states that were unable to issue timely WQS on their own.<sup>15</sup> Although the State of Washington soon recognized the need to revise these NTR-based standards, its efforts stalled for years. All the while, Washington's waters were allowed to be contaminated up to the level permitted by its extant standards – a level that supported fish consumption at a mere 6.5 grams/day – just one fish meal per month. This estimate of fish intake was drawn from a survey of the general population in the United States conducted back in 1973-74.

Meanwhile, more recent local studies of fish intake by tribal and other populations in the Pacific Northwest became available in the 1990s. For example, the Columbia River Inter-Tribal Fish Commission (CRITFC) published a survey quantifying its four member tribes' contemporary fish consumption in 1994; and the Squaxin Island and Tulalip Tribes published a survey of their respective tribes' contemporary fish intake in 1996.<sup>16</sup> These surveys documented contemporary fish intake at markedly higher rates than reflected in Washington's FCR, ranging as high as 972 grams/day.<sup>17</sup> Shortly thereafter, Washington acknowledged the need to incorporate this new scientific data into state standards for water and cleanups. In fact, it published a draft analysis of these studies as early as 1999.<sup>18</sup> Yet, it sat on its NTR-based standards for another decade,

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<sup>12</sup> 33 U.S.C. § 1313(c)(2)-(4)(A).

<sup>13</sup> 33 U.S.C. § 1313(c)(4)(B).

<sup>14</sup> Congress' distaste for delay on the part of the states was made known during debate surrounding the 1987 amendments. *See, e.g.*, U.S. Environmental Protection Agency, Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance; Final Rule, 57 Fed. Reg. 60848, 60849 (Dec. 22, 1992) [hereinafter EPA, NTR] ("The critical importance of controlling toxic pollutants has been recognized by Congress and is reflected, in part, by the addition of section 303(c)(2)(B) to the Act. Congressional impatience with the pace of State toxics control programs is well documented in the legislative history of the 1987 amendments.").

<sup>15</sup> *Id.*

<sup>16</sup> COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION, A FISH CONSUMPTION SURVEY OF THE UMATILLA, NEZ PERCE, YAKAMA AND WARM SPRINGS TRIBES OF THE COLUMBIA RIVER BASIN (1994); KELLY A. TOY, ET AL., A FISH CONSUMPTION SURVEY OF THE TULALIP AND SQUAXIN ISLAND TRIBES OF THE PUGET SOUND REGION (1996).

<sup>17</sup> *Id.* 972 grams/day is the maximum value documented in the CRITFC survey.

<sup>18</sup> In 1999 Ecology published a draft document, which it never finalized, that analyzed the CRITFC and Tulalip/Squaxin Island data as part of its review of the then-current science for use in its risk-based water quality

preferring to wait and “observe” while neighboring states and tribes updated their respective WQS to reflect the most recent science.<sup>19</sup>

The scientific evidence continued to mount showing higher fish intake by people affected by Washington’s standards. For example, a survey of ten Asian-American and Pacific Islander groups in King County was published in 1999; and a survey of the Suquamish Tribe was published in 2000.<sup>20</sup> It wasn’t until 2010 that Washington finally initiated the formal process to update its WQS. And then its rulemaking effort dragged on for years.

Throughout this time, EPA worked alongside Washington’s Department of Ecology (Ecology), seeking to facilitate a state process that would result in approvable WQS.<sup>21</sup> Even as the state struggled through several missed deadlines, reversals of course, and other irregularities – and the months and then years ticked by – EPA did its utmost to defer to the state and allow the state’s process to unfold. Ultimately, more than two decades passed between the time the CRITFC data became available and the time Washington finally updated its water quality standards to reflect this scientific information. Washington’s egregious delay is summarized in NWIFC’s Comments on Ecology’s 2016 Draft Rule.<sup>22</sup>

Washington’s recalcitrance is of great concern to NWIFC and its 20 member tribes. NWIFC’s member tribes have constitutionally protected, treaty-reserved rights to harvest, consume, and manage fish and shellfish in their usual and accustomed areas. These areas are directly or indirectly affected by the WQS established for waters over which the state claims jurisdiction.<sup>23</sup> NWIFC thus emphasizes the urgent need to ensure that WQS for Washington protect these reserved rights and resources, and protect the health, livelihoods, and well-being of tribal members. While Ecology’s process was allowed to drag on, Washington’s outdated standards forced anyone who would eat

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and cleanup standards. LESLIE KEILL & LON KISSINGER, WASHINGTON STATE DEPARTMENT OF ECOLOGY, ANALYSIS AND SELECTION OF FISH CONSUMPTION RATES FOR WASHINGTON STATE RISK ASSESSMENTS AND RISK-BASED STANDARDS (Draft, 1999).

<sup>19</sup> Catherine A. O’Neill, *Fishable Waters*, 1 AM. INDIAN L. J. 181, at 220-27 & n.209 (2013) [hereinafter O’Neill, *Fishable Waters*] (chronicling Washington’s lengthy delay in updating its WQS and documenting Ecology staff statements to this effect).

<sup>20</sup> Ruth Sechana, et al., ASIAN AND PACIFIC ISLANDER SEAFOOD CONSUMPTION SURVEY (1999); THE SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH INDIAN TRIBE OF THE PORT MADISON INDIAN RESERVATION, PUGET SOUND REGION (2000) [hereinafter Suquamish Survey].

<sup>21</sup> In fact, the state came under criticism for the numerous delays and reversals of course that marked its process; nonetheless, EPA worked assiduously to facilitate the state’s efforts to produce approvable WQS. See, e.g., O’Neill, *Fishable Waters*, at 232-40.

<sup>22</sup> Northwest Indian Fisheries Commission, Comments on the Washington Department of Ecology’s 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington Water Quality Standards, Appendix A, “Detailed Chronology of Tribal Efforts to Establish Revised Human Health Criteria and State’s Responses” (April 20, 2016) [hereinafter NWIFC, Comments on Ecology’s Draft Rule].

<sup>23</sup> 90.48.030 Wash. Rev. Code (“The department [of Ecology] shall have the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington”).

fish more than once a month to do so at his or her peril. The affront to the NWIFC tribes – who are fishing peoples – is profound.

EPA, of course, has its own legal obligations under the CWA. It could no longer wait in the wings while the state permitted these unsupportable standards to operate as a *de facto* ceiling on the safe consumption of fish from Washington waters. Finally, in September of 2015, EPA stated that “[b]ecause Washington’s existing human health criteria, as promulgated by EPA in the NTR, are no longer protective of the applicable designated uses per the CWA ... EPA determines under CWA section 303(c)(4)(B) that new or revised WQS for the protection of human health are necessary to meet the requirements of the CWA for Washington.”<sup>24</sup> EPA noted that Washington had yet to update the 1992 NTR-based standards and emphasized that “the best available data now demonstrate that fish consumers in Washington, including tribes with treaty-protected rights, consume much more fish than 6.5 g/day. There are also new data and scientific information available to update the toxicity and exposure parameters used to calculate human health criteria.”<sup>25</sup> EPA’s determination triggered a non-discretionary duty under the CWA to propose water quality standards for Washington within ninety days.<sup>26</sup> Nonetheless, EPA held back, in hopes that the state would issue its own standards. Still, the state was unable to do so.

On February 26, 2016, Washington Waterkeepers sued the EPA in federal district court, and shortly thereafter sought an injunction requiring EPA to comply with the CWA by promulgating revised water quality standards within thirty days of a court order.<sup>27</sup> Even here, EPA sought to accommodate the state, requesting that the court permit additional time for the state to produce an approvable rule.<sup>28</sup> Specifically, it asked that any court-ordered deadline be postponed until September 15, 2016, but, if Ecology submitted its own water quality standards before that date, that the deadline be postponed further, until November 15, 2016, in order “to prevent unnecessary promulgation of federal criteria.”<sup>29</sup> The court was persuaded by EPA’s entreaty on the state’s behalf.

As even this summary account of the rulemaking timeline makes clear, *EPA’s relationship with the state has been one of support and deference* – quite the opposite of the picture the Petition attempts to paint of an EPA that “has sought to advanced [sic] its agenda with no basis in and in disregard of the Clean Water Act.” Rather, it was because of its obligations under the CWA that EPA

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<sup>24</sup> 80 Fed. Reg. at 55066.

<sup>25</sup> *Id.* at 55063.

<sup>26</sup> 33 U.S.C. § 1313(c)(4). The deadline was December 14, 2015.

<sup>27</sup> *Puget Soundkeeper Alliance, et al. v. U.S. Environmental Protection Agency*, Case No. 2:16-cv-00293-BJR, Memorandum Opinion, 2 (W.D. Wash., Aug. 3, 2016).

<sup>28</sup> *Id.* at 4.

<sup>29</sup> *Id.* at 6.

could no longer legally decline to act. Indeed, as the federal district court put it, “when agency dereliction occurs, as it did here,” courts must compel their compliance with the CWA.<sup>30</sup>

## **II. Washington Submitted Standards that Were Not Based on “Sound Scientific Rationale” and Were Not Fully Approvable by EPA**

Ultimately, Washington submitted standards to EPA that, while approvable in some respects, fell short of this mark in others. EPA is tasked with ensuring that a state’s water quality criteria are “based on sound scientific rationale” and “contain sufficient parameters or constituents to protect the designated use.”<sup>31</sup> However, Ecology’s criteria in numerous instances simply ignored the best available science. More importantly, this was the case for several priority contaminants and key variables. Contrary to the Petition’s contention, EPA could not permissibly have approved the standards submitted by Washington.

Ecology submitted a rule that, as a general matter, took a step forward with respect to some of the key variables used to calculate its standards. Faced with overwhelming scientific evidence that people affected by Washington’s standards consume fish at rates considerably greater than the agency had previously assumed, the state was persuaded that it could not defensibly use an FCR of less than 175 grams/day. While this FCR captures only contemporary fish intake that has been shown to be biased downward due to suppression, it is an improvement in terms of incorporating updated science.<sup>32</sup> Ecology’s rule also continued to embrace the state’s longstanding judgment that people should not be subjected to an increased cancer risk greater than 1 in 1,000,000. For several of the contaminants that matter most for human health, however, Ecology’s rule included exceptions or alternative assumptions that resulted in less protective standards.

For example, Ecology’s final rule effectively did nothing to update its standards for either methylmercury or PCBs – leaving in place a status quo that was a quarter of a century old (these two examples are elaborated below). Worse, Ecology’s rule resulted in *more lenient* standards for dioxins, arsenic, and 5 of the 7 carcinogenic polycyclic aromatic hydrocarbons (PAHs) than those previously in force in the state. EPA appropriately found that it could only partially approve

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<sup>30</sup> *Id.* at 7.

<sup>31</sup> 40 C.F.R. § 131.11(a)(1).

<sup>32</sup> As documented at length in comments by NWIFC to Ecology, while an FCR of 175 grams/day is an “improvement” over the woefully outdated and unsupportable FCR on which Washington’s WQS had previously been based, from NWIFC’s perspective this FCR reflects a “a minimum value that must be used in conjunction with other revised values” for the inputs to the equations used to derive human health criteria, including the acceptable risk level, bioaccumulation factors, and relative source contribution. Moreover, this FCR “is lower than documented contemporary or heritage rates in regional tribal communities, and does not account for the suppression of fish consumption resulting from the availability of fish and shellfish, habitat degradation, biological and chemical contamination, or access to fishing grounds.” NWIFC, Comments on Ecology’s Draft Rule, at 13-30, & App. C.

Washington's rule, where Ecology had circumvented, rather than grounded its standards in, an updated and "sound scientific rationale" and had thus submitted HHC that would fail to be protective of Washington's designated uses. The reasoning supporting EPA's finding was thoroughly explained in its final rule and its technical basis elaborated in EPA's 46-page Technical Support Document.<sup>33</sup>

### A. Methylmercury

Washington's approach to methylmercury is out of step with the current science. The adverse human health effects of methylmercury have long been documented, for example, in the EPA's *Mercury Study Report to Congress* in 1997, and in the National Research Council's *Toxicological Effects of Methylmercury* in 2000.<sup>34</sup> Despite broad scientific consensus regarding methylmercury's harms and despite EPA guidance on a methylmercury criterion dating from 2001, Washington, remarkably, *simply refused to update* its standard for methylmercury. Instead, it put off any revision of its mercury standard until some unspecified time in the future, stating that it had "decided to defer" the adoption of a methylmercury HHC until after the current rulemaking.<sup>35</sup> That is, Ecology took it upon itself to relegate to the back burner one of the state's *most pressing* contaminants.

Methylmercury is a potent neurodevelopmental toxin; exposure *in utero* or during childhood may result in irreversible neurological damage.<sup>36</sup> Methylmercury is an extremely bioavailable form of mercury, readily uptaken by fish, where it bioaccumulates in fish tissue.<sup>37</sup> In 2001, EPA issued its methylmercury water quality criterion, expressed as a fish and shellfish tissue value.<sup>38</sup> As it noted, "[t]his approach is a direct consequence of the scientific consensus that consumption of contaminated fish and shellfish is the primary human route of exposure to methylmercury."<sup>39</sup> In discussing methylmercury's human health risks, EPA stated bluntly that "methylmercury is highly toxic to mammalian species and causes a number of adverse effects."<sup>40</sup> EPA's methylmercury criterion was based on a reference dose (RfD) of 0.1 µg/kg/day that had been "established as the Agency consensus estimate in 1995," and its scientific basis "updated using the most current data

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<sup>33</sup> U.S. Environmental Protection Agency, Technical Support Document, The EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools Submitted on August 1, 2016 (Nov. 15, 2016) [hereinafter EPA, TSD for Washington's HHC].

<sup>34</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, 1 MERCURY STUDY REPORT TO CONGRESS (1997); NATIONAL RESEARCH COUNCIL, TOXICOLOGICAL EFFECTS OF METHYLMERCURY (2000) [hereinafter NRC, METHYLMERCURY].

<sup>35</sup> Washington State Department of Ecology, Washington State Water Quality Standards: Human Health Criteria and Implementation Tools, Overview of Key Decisions in Rule Amendment 80 (Aug. 2016) [hereinafter Ecology, Key Decisions].

<sup>36</sup> NRC, METHYLMERCURY, at 17.

<sup>37</sup> *Id.* at 16.

<sup>38</sup> U.S. Environmental Protection Agency, Water Quality Criteria: Notice of Availability of Water Quality Criteria for the Protection of Human Health: Methyl Mercury, 66 Fed. Reg. 1344 (Jan. 8, 2001).

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 1352.

and analyses.”<sup>41</sup> As it issued the methylmercury water quality criterion in 2001, EPA reminded states of their obligations under the CWA, stating “once EPA publishes new or revised section 304(a) water quality criteria guidance,” it “expects the criterion recommendation to be used ... by states ... in establishing or updating water quality standards.”<sup>42</sup> As of 2010, seven states, two territories, and the District of Columbia had already adopted the new methylmercury fish tissue criterion.<sup>43</sup> In 2010, EPA provided further assistance, publishing extensive implementation guidance for those states that had yet to incorporate the updated methylmercury criterion.<sup>44</sup> In issuing this additional guidance, EPA emphasized that it “expect[ed]” all remaining states to incorporate the 2001 methylmercury criterion during their next triennial review.<sup>45</sup> And states, such as Oregon, routinely did so, integrating the 2001 criterion with a fish consumption rate founded on local data, as recommended by the EPA guidance.<sup>46</sup>

During this period, Washington increasingly recognized the threat posed by methylmercury contamination throughout the state. Its Department of Health issued a statewide fish consumption advisory for methylmercury, warning people to reduce or eliminate consumption of fish from its waters.<sup>47</sup> Its Department of Ecology identified methylmercury as a priority contaminant in Puget Sound.<sup>48</sup>

Thus, by the time it finally sought to update its water quality standards, Ecology had had ample notice that its methylmercury standard would need to be updated to reflect the current science, and had been provided with technical guidance by EPA on how to do so. Yet, inexplicably, Ecology simply refused. Instead, it dubbed methylmercury a “challenging chemical,” and claimed that,

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<sup>41</sup> *Id.*

<sup>42</sup> *Id.* at 1344; 1350. In fact, EPA has made clear to states since the 1980s the expectation that states would incorporate any EPA updates to criteria at their earliest opportunity, i.e., as part of the next triennial review. EPA informed states in guidance memoranda that “EPA expects each State to comply with [these] statutory requirements in any section 303(c) water quality standards review initiated after enactment of the Water Quality Act of 1987.” See, e.g., U.S. Environmental Protection Agency, Guidance for State Implementation of Water Quality Standards for CWA Section 303(c)(2)(B) at 15 (Dec. 1988), <https://www.epa.gov/sites/production/files/2014-10/documents/cwa303c-hanmer-memo.pdf>.

<sup>43</sup> U.S. Environmental Protection Agency, Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion (2010).

<sup>44</sup> *Id.*

<sup>45</sup> *Id.* at 17. (“EPA expects that with the publication of this guidance, states and authorized tribes will include new or revised criteria for methylmercury in their waters as part of the next three year review of standards required by section 303(c) of the Clean Water Act”).

<sup>46</sup> U.S. Environmental Protection Agency, Technical Support Document for EPA’s Action on Oregon’s New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011 (Oct. 17, 2011).

<sup>47</sup> Washington Department of Health, “Fish Consumption Advisories” <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories.aspx>.

<sup>48</sup> Washington Department of Ecology, *Control of Toxic Chemicals in Puget Sound* 20 (2011), <https://fortress.wa.gov/ecy/publications/documents/1103024.pdf> (identifying methylmercury among 17 priority “contaminants of concern” given that they “harm or threaten to harm the Puget Sound ecosystem”).



therefore, it needed more time. It offered no scientific rationale for failing to update the HHC for this priority contaminant. Rather, Ecology claimed vaguely that it wished to develop an “integrated approach” to address methylmercury; noted that this would take time to do; and argued that “[t]aking time to develop an integrated approach now would slow the progress of the adoption of the other proposed HHC and implementation tools. Ecology thinks continued progress on the main rule adoption is important to maintain.”<sup>49</sup>

Notably, although Ecology’s rulemaking work continued in earnest in the months and years immediately preceding the issuance of its water quality standards in 2016, Ecology declined to make use of this time to incorporate the federal methylmercury criterion into its rule. Ecology’s 2015 rule did not include a methylmercury criterion, but this rule was subsequently withdrawn at the Governor’s direction, and Ecology went back to the drawing board to alter key parameters. However, despite the additional time afforded by this withdrawal, Ecology’s final rule, submitted in 2016, did nothing to remedy the lack of a methylmercury standard. In fact, to the contrary, the record shows that, as early as 2013, Ecology had identified “postpone development” of a criterion as a “possible path” for handling the need to update its methylmercury standard.<sup>50</sup>

In short, despite a longstanding scientific consensus on methylmercury’s harms, and despite the existence of a CWA 304(a) methylmercury criterion since 2001, Ecology – 15 years later – still declined to update its methylmercury standard by seeking more time. Ecology’s inaction on methylmercury flies in the face of the “sound scientific rationale” on which state standards must be based under the CWA, as EPA appropriately found. It is in precisely such circumstances of state recalcitrance that Congress directed EPA to step in and ensure that the CWA’s goals are not thwarted. EPA’s rule, accordingly, includes an updated criterion for methylmercury in fish tissue, thus addressing this contaminant of utmost concern for people who consume fish from Washington waters.

## **B. PCBs**

Washington’s approach to PCBs is similarly not scientifically defensible. Ecology arrived at its criterion for PCBs in a circuitous manner that was clearly not driven by the science. Ecology didn’t accept the criterion that would have resulted by a straightforward calculation using its standard assumptions for its carcinogenic HHC – namely the updated FCR of 175 grams/day and its longstanding espousal of an acceptable cancer risk level of 1 in 1,000,000, that is,  $1 \times 10^{-6}$ . Instead, Ecology selected what it termed a “chemical-specific risk level” to be used “exclusively for PCBs”<sup>51</sup> –

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<sup>49</sup> Ecology, Key Decisions, at 83.

<sup>50</sup> Washington Department of Ecology, Surface Water Quality Standards: Human Health Criteria Policy – Information to Support Morning Discussion on Rule Alternatives (Nov. 6, 2013) <http://www.ecy.wa.gov/programs/wq/swqs/Nov6AfternoonPresentation.pdf#page=43>.

<sup>51</sup> Ecology, Key Decisions, at 66.

one that was nearly an order of magnitude less protective, at  $4 \times 10^{-5}$ . Ecology plugged this number into its risk assessment equation, but the result was that the PCB criterion would be less stringent than Washington's current criterion for PCBs – which, as you may recall, supports fish intake at the mere 6.5 grams/day rate. So, Ecology decided to default to its current PCB criterion under the NTR. It then back-calculated to determine what risk level was necessary to make the math work out, given its updated FCR. Thus, Ecology arrived at a risk level that is unique to PCBs,  $2.3 \times 10^{-5}$ .<sup>52</sup>

Ecology's machinations to avoid the mathematical result of the updated science on fish intake raised a flag EPA would have been remiss to neglect. Ecology's cancer risk level for PCBs is a constructed number, back-calculated to ensure no change from the status quo. Ecology offered no evidence that those exposed to this contaminant in fact view cancer attributable to PCBs to be different from – and somehow more acceptable than – cancer attributable to any other contaminant.<sup>53</sup> Ecology provided no account of how the citizens of Washington arrived at a nearly tenfold increase in risk from PCBs than they accepted from other carcinogens.<sup>54</sup> This lack of substantiation is the more problematic given that it is a clear departure from the  $1 \times 10^{-6}$  risk level that had been in effect *for all toxic contaminants* in Washington for more than two decades, and a clear departure from the  $1 \times 10^{-6}$  risk level that Ecology was persuaded to retain in general for the HHC it submitted – due to the public outcry over the  $1 \times 10^{-5}$  risk level contained in the rule that Ecology initially proposed but ultimately withdrew.

Moreover, Ecology's PCB-specific risk level is also a departure from the standard risk level assumed by EPA in issuing criteria for use by states nationwide. EPA has indicated that in reviewing states' water quality standards, it will consider the actual risk that results to those affected when all of a state's selected parameters are considered, and has stated that its scrutiny will increase as a state's target risk level becomes less protective or less conservative, e.g., if it moves from  $1 \times 10^{-6}$  to  $1 \times 10^{-5}$ .<sup>55</sup> EPA has emphasized that it will "carefully evaluate" a state's assumptions if the state chooses "to alter any one of the standard EPA assumption values."<sup>56</sup>

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<sup>52</sup> *Id.* at 67.

<sup>53</sup> *Id.* at 62-67 (discussing derivation of HHC for PCBs but offering no evidence or references in the literature for PCB-specific judgments on the acceptability of cancer risk).

<sup>54</sup> *Id.*

<sup>55</sup> EPA, NTR, 57 Fed. Reg. at 60855 ("In submitting criteria for the protection of human health, States were not limited to a 1 in 1 million risk level ( $10^{-6}$ )... If a State selects a criterion that represents an upper bound risk level less protective than 1 in 100,000 (i.e.,  $10^{-5}$ ), however, the State needed to have substantial support in the record for this level.... [Among other things,] the record must include an analysis showing that the risk level selected, when combined with other risk assessment variables, is a balanced and reasonable estimate of actual risk posed, based on the best and most representative information available. The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes. EPA carefully evaluated all assumptions used by a State if the State chose to alter any one of the standard EPA assumption values.").

<sup>56</sup> *Id.*

Again, EPA appropriately found Ecology's criterion not to be protective of Washington's designated uses and Washington's proffered justification to be unavailing, as it was untethered to a sound scientific rationale. EPA's rule, accordingly, includes a criterion for PCBs that is derived by a straightforward application of the updated FCR of 175 grams/day and Washington's longstanding cancer risk level of  $1 \times 10^{-6}$ .

These two examples of Ecology's maneuverings to avoid what sound science requires for methylmercury and PCB criteria are meant to be illustrative. This account does not exhaust the scientific infirmities of the WQS submitted by Ecology to EPA. It should, however, afford a sense of the deficiencies in Ecology's rule and of the appropriateness of EPA's partial disapproval as well as the appropriateness of EPA's issuance of several WQS for Washington – contrary to the Petition's portrayal. EPA analysis was undertaken and documented as part of a robust public process, as elaborated below in Part III.

### **III. The Petition Merely Rehashes Arguments that Have Already Been Thoroughly Vetted in Public Processes**

The Petition merely rehashes arguments that have already been thoroughly vetted in lengthy public processes at the state and federal levels, throughout which industry was an active participant. These arguments have already been carefully considered by EPA through robust notice-and-comment rulemaking. EPA provided its reasons for accepting or rejecting these arguments, as appropriate, and documented its analysis in a voluminous record. There is no new science or law that would require a different result were EPA again to undertake this analysis. Any new rulemaking would likely produce the same outcome. As such, the reconsideration that the Petition requests would amount to an unproductive bureaucratic exercise, and thus an unnecessary waste of taxpayer money.

The Petition asks EPA to reconsider and approve the state's water quality criteria, and to repeal or withdraw the EPA water quality criteria for Washington, citing 5 U.S.C. § 553(e). But this provision of the Administrative Procedure Act (APA) does not confer on agencies unfettered authority to reevaluate and discard past rulemakings. Rather, under the APA, an agency may reconsider its earlier rules only to the extent permitted by law, and any revisions will be scrutinized to ensure they are supported by "a reasoned explanation."<sup>57</sup> Moreover, an agency may not disregard the science in order to effectuate a change in policy. As always, an agency must articulate a rational connection between the facts it finds and the conclusions it reaches.<sup>58</sup> And, as Justice Kennedy recently emphasized in concurrence in *FCC v. Fox Television Stations, Inc.*, "[a]n agency cannot simply

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<sup>57</sup> *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 516 (2009) (stating that "a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy").

<sup>58</sup> *Motor Vehicle Mfrs. Ass'n v State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983).

disregard contrary or inconvenient factual determinations that it made in the past.”<sup>59</sup> Yet the Petition offers no new scientific or legal support that would allow EPA permissibly to reach a different conclusion. It points to no new data, studies, evidence, or circumstances on which EPA could rationally base a reversal of course.

Instead, the Petition repeats the same arguments that industry had already urged during the years-long state and federal processes, throughout which industry was an active participant. Indeed, its arguments are often lifted verbatim from earlier comment letters they had submitted for consideration by the state and federal agencies over the years. In some instances, the Petition didn’t even bother to update its citations – for example, it references the national default FCR as being 17.5 grams/day;<sup>60</sup> however, this national default value was updated in 2015 to 22 grams/day. The Petition achieves its length by cutting and pasting from documents that had been made available to, and were thoroughly considered by, Ecology, EPA, and the public during the extensive state and federal processes chronicled above in Part I.

Under the Clean Water Act, EPA is authorized to approve a state’s submitted WQS only if “such standards meet the requirements of this chapter.”<sup>61</sup> CWA § 303 provides:

Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.<sup>62</sup>

EPA supported with a detailed, rigorous analysis its finding that many of the state’s water quality criteria were not “based on sound scientific rationale” and did not “contain sufficient parameters or constituents to protect the designated use.”<sup>63</sup> EPA similarly supported with a detailed, rigorous analysis the water quality criteria that it was required, under the CWA, to issue in the state’s stead.<sup>64</sup> The Petition raises no new information on which EPA might permissibly base an outcome that departs from these well-reasoned analyses. Reconsideration now would not reasonably sustain a different rule. The Petition’s request for reconsideration is thus a request for what can only be a pointless and wasteful bureaucratic exercise. As noted above, the State of Washington

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<sup>59</sup> *FCC*, 556 U.S. at 537 (Kennedy, J., concurring in part and concurring in the judgment).

<sup>60</sup> Petition, at 46.

<sup>61</sup> 33 U.S.C. § 1313(c)(3) and (4).

<sup>62</sup> 33 U.S.C. § 1313(c)(2)(A).

<sup>63</sup> See generally EPA, TSD for Washington’s HHC.

<sup>64</sup> *Id.*

itself has indicated its desire to move on, and focus instead on working together with its regulated sources on implementation.

EPA's rule, moreover, is the result of years of public process at the state and federal levels, culminating in a robust notice-and-comment rulemaking process. Industry was an active participant throughout these processes. Industry's arguments, reiterated again in the Petition, have already been carefully and thoroughly considered by EPA. EPA provided notice of, and ample opportunity to comment on, its proposed rule; EPA provided its reasons for accepting or rejecting these and other arguments, as appropriate, and documented its analysis in a voluminous administrative record,<sup>65</sup> including a 419-page Response to Public Comments.<sup>66</sup> EPA then published a final rule that was supported by scientific and legal analysis that was consistent with its proposed rule, while reflecting changes where warranted in response to the input it had solicited and received during the public comment period.

The Petition, however, claims that the public was not afforded adequate notice of, and opportunity to comment on, the analysis that supported EPA's final rule, citing APA § 553(b) and (c). In particular, the Petition attempts to portray as "novel" those aspects of EPA's rationale that pertain to tribal treaty rights, asserting that this was "invent[ed]" in the final rule and "not put forth in the proposed rule."<sup>67</sup> For example, the Petition tries to make much of the fact that the proposed rule used the term "tribal reserved fishing right" and mentioned the word "subsistence" twice, whereas the final rule used the term "treaty-reserved subsistence right" and mentioned the word "subsistence" sixty times, claiming, therefore, that the EPA had "abandoned the treaty rights 'analysis' contained in the proposed rule" and "replaced" this in the final rule with a treaty rights analysis that it had just "discovered."<sup>68</sup>

However, an unprejudiced inspection of the rulemaking record shows the Petition's claim to be unavailing. EPA set forth in its proposed rule its supporting scientific and legal analysis, including

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<sup>65</sup> This record can be accessed via regulations.gov at Docket ID: EPA-HQ-OW-2015-0174.

<sup>66</sup> U.S. Environmental Protection Agency, Response to Comments: Revision of Certain Federal Water Quality Criteria Applicable to Washington, 40 CFR Part 131 (Nov. 10, 2016) [hereinafter EPA, Response to Comments].

<sup>67</sup> Petition, at 30.

<sup>68</sup> Petition, at 20; 24-26. The Petition then tries to parlay this characterization into a basis for additional OMB review, on the theory that EPA's final rule "raises a novel legal or policy issue" and is therefore a "significant regulatory action" within the meaning of EO 12866 § 3(f). Petition, at 66-67. As elaborated below in Part V, however, EPA's treaty rights analysis rests on longstanding legal obligations contained in the U.S. Constitution, treaties, and caselaw. The Petition also inaccurately portrays the overall determination that the proposed and final rules do not constitute significant regulatory action as having been made solely by EPA. Petition, at 63-67. EPA, however, consulted with OMB prior to publishing both rules. These consultations afforded OMB the occasion to have any questions addressed and ultimately to satisfy itself that it was unnecessary to conduct additional OMB review; OMB thus determined that it would "waive" further review, and communicated this decision to EPA. EPA documented this exchange in its Response to Comments, noting that "The Office of Management and Budget (OMB) concurred with EPA that this rule is not a significant regulatory action under the terms of 12866 and is, therefore, not subject to review under Executive Orders 12866 and 13563 (Improving Regulation and Regulatory Review)." EPA, Response to Comments, at 400-01.

the need to “effectuate and harmonize” standards set or approved under the CWA for Washington with the relevant tribal treaties.<sup>69</sup> EPA specifically pointed out that, “when setting criteria to support the most sensitive use in Washington, it is necessary to consider other applicable laws, including federal treaties” and that, “[i]n Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes, including treaty-reserved rights to fish at all usual and accustomed fishing grounds and stations in waters under state jurisdiction, which cover the majority of waters in the state.”<sup>70</sup>

The APA requires an agency conducting notice-and-comment rulemaking to publish in its notice of proposed rulemaking “either the terms or substance of the proposed rule or a description of the subjects and issues involved.”<sup>71</sup> Courts have generally interpreted this to mean that the final rule the agency adopts must be a “logical outgrowth” of the rule proposed.<sup>72</sup> Courts have explained that “the relevant inquiry is whether or not potential commentators would have known that an issue in which they were interested was ‘on the table’ and was to be addressed by a final rule,” noting, that “[w]hile an agency must explain and justify its departures from a proposed rule, it is not straitjacketed into the approach initially suggested on pain of triggering a further round of notice-and-comment.”<sup>73</sup>

Industry and the public were afforded ample notice of and the opportunity to comment on EPA’s scientific and legal analysis, and did so, during the public comment period – a period that EPA extended, at industry’s request.<sup>74</sup> It is difficult to comprehend how the Petition can suggest that industry or the public were not aware that the matter of tribes’ treaty-secured subsistence fishing rights was “on the table” when the proposed rule explicitly stated that it was “necessary” to consider tribal treaties, that “[i]n Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes,” and that these “treaty-reserved rights to fish” “cover the majority of waters in the state.”<sup>75</sup> While EPA’s final rule thus incorporated semantic changes, included clarifications, and provided further explanation and support, as appropriate, its final rule was premised on substantially the same scientific and legal analysis as its proposed rule. The nature and extent of the changes from the proposed rule to the final rule were precisely those that would be expected as part of a notice-and-comment rulemaking process in

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<sup>69</sup> 80 Fed. Reg. at 55067.

<sup>70</sup> 80 Fed. Reg. at 55066 (citation omitted).

<sup>71</sup> 5 U.S.C. § 553(b)(3).

<sup>72</sup> See, e.g., *United Steelworkers of America, AFL-CIO-CLC v. Marshall*, 647 F.2d 1189, 1221 (D.C. Cir. 1980), cert. denied *sub nom. Lead Industries Assn., Inc. v. Donovan*, 453 U.S. 913 (1981).

<sup>73</sup> *Am. Med. Ass’n. v. United States*, 887 F.2d 760, 768-69 (7th Cir. 1989).

<sup>74</sup> Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85417, 85418 & n.3 (providing a 45-day extension at the request of the Association of Washington Business—Washington State’s Chamber of Commerce, Washington Public Ports Association (on behalf of the Association of Washington Cities and the Washington State Association of Counties), Western Wood Preservers Institute, ALCOA, American Forest and Paper Association, McFarland Cascade, Schnitzer Steel Industries, and Weyerhaeuser).

<sup>75</sup> 80 Fed. Reg. at 55066.

which EPA was open to industry and other public input. EPA's final rule was a "logical outgrowth" of the rule it proposed and its rulemaking was clearly adequate in view of the courts' understanding of the APA's notice-and-comment requirements.

Finally, to the extent that the Petition makes arguments related to implementation, it raises issues that are outside of those EPA is statutorily authorized to consider in setting HHC. Under the CWA, HHC are health-based standards, such that considerations of technical feasibility and cost are not properly part of the standard-setting exercise undertaken by states or the EPA.<sup>76</sup> Rather, Congress directed that these standards be set "to protect the public health or welfare," among other things by ensuring that the waters are "fishable" – i.e. that they support fish that may be safely harvested and consumed by humans. Thus, the Petition's allegations regarding the feasibility and cost of compliance, even if true, are not germane to the state's or EPA's HHC standard-setting inquiry. Because these issues fall outside those EPA may permissibly consider, it would be "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law"<sup>77</sup> to import these factors into the CWA where Congress saw fit to exclude them. EPA appropriately recognized as much. In its Response to Comments, EPA stated that "[w]ater quality criteria are scientifically derived, measurable properties of water that, when achieved, protect applicable designated uses. Thus water quality criteria are not derived on the basis of costs and benefits, nor does the CWA allow for their derivation in such a manner."<sup>78</sup> Rather, as discussed below in Part IV, these concerns are properly considered – and were in fact addressed – by means of implementation tools.

#### **IV. EPA Largely Affirmed Washington's Use of Implementation Tools to Allow Industry a Reasonable Time to Comply with CWA Requirements**

Ecology devoted considerable effort during the rulemaking process to expand its existing implementation tools and to develop new implementation tools – all with an eye toward accommodating industry's concerns with respect to feasibility and costs.<sup>79</sup> EPA assisted Ecology in this effort, working to fashion devices that responded to industry input and ideas. Some of these tools (e.g., intake credits) were newly created in this rulemaking – designed specifically to resolve issues that industry had presented to the agencies. EPA largely affirmed the enlarged menu of implementation tools, now available in Washington, in order to allow industry a reasonable time to

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<sup>76</sup> See, e.g., Catherine A. O'Neill, *Exposed: Asking the Wrong Question in Risk Regulation*, 48 ARIZ. ST. L. J. 703, 712 (2016) (discussing health-based standards, which "seek to eliminate contaminants in excess of levels that are safe for humans or levels that pose an amount of risk deemed acceptable").

<sup>77</sup> 5 U.S.C. § 706(2)(A).

<sup>78</sup> EPA, Response to Comments, at 401.

<sup>79</sup> See, e.g., Northwest Pulp & Paper Association, Letter to Becka Conklin, Washington State Department of Ecology (Dec. 17, 2010) (responding to Ecology's initiation of triennial review process under the CWA, and urging Washington to expand its "implementation tools" as a pre-condition to updating its FCR and its WQS).

comply with the new WQS.<sup>80</sup> Regulated sources will now be able to avail themselves of variances, compliance schedules, and/or intake credits in order to help them achieve compliance.<sup>81</sup>

EPA deferred for the most part to the state's formulation of these tools, affirming that "[t]he state may use its approved implementation tools in concert with the approved new state criteria as well as the federal human health criteria applicable to Washington."<sup>82</sup> In so doing, EPA emphasized that it "recognizes the importance of implementation tools in making progress toward improved water quality while allowing a reasonable time for industry to comply" with new requirements, and "remains committed to providing assistance to Ecology during implementation of the criteria."<sup>83</sup>

In fact, it is in the realm of implementation where there *have* been new developments since Washington embarked on its rulemaking—contrary to the Petition's assumption of technological stasis.<sup>84</sup> Notably, there have already been innovations in the technologies available to address PCB contamination, even since the time of the 2013 HDR Engineering survey relied upon by industry in its comments to the administrative record, and cited again in the Petition for its claim that minimizing PCBs is "not technologically feasible." For example, in 2016 Virginia's Department of Environmental Quality (VDEQ) published a 71-page *Pollution Minimization Plan Technical Resource Guide* for PCBs, detailing the numerous technologies and systems (e.g., "treatment trains") for minimizing PCBs in various environmental media.<sup>85</sup> In the section devoted to "Remediation Methods for Industrial, Wastewater, and Stormwater Effluent," VDEQ identified several categories of available treatment methods for PCBs. *In fully 2/3 of these categories, VDEQ documented innovations in the treatment methods that had emerged since industry's 2013 compilation of then-available technologies.*<sup>86</sup>

Moreover, as Virginia underscored, the conditions for continued innovation and entrepreneurship are ripe, given the certain market provided by the need to address the widespread threat that PCBs pose to human health. "Due to the widespread problem of PCB contamination, efficient and cost-

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<sup>80</sup> EPA, TSD for Washington's HHC, at 35-46.

<sup>81</sup> *Id.*

<sup>82</sup> Letter from Daniel D. Opalski, EPA Region X, to Maia Bellon, Washington State Department of Ecology, Transmitting the EPA TSD for Washington's HHC at 4 (Nov. 15, 2016).

<sup>83</sup> *Id.*

<sup>84</sup> This is in contrast to the lack of new scientific developments that would warrant a different analysis in terms of *setting* the HHC, as discussed above in Part III.

<sup>85</sup> VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, POLLUTION MINIMIZATION PLAN TECHNICAL RESOURCE GUIDE 22-45 (Mar. 11, 2016) (compiling "a list of methods that have been shown to successfully remediate PCBs across different matrices, including an additional section addressing methods used to remediate PCB contamination in effluent and waste streams") [hereinafter VDEQ, PCB POLLUTION MINIMIZATION TECHNOLOGIES].

<sup>86</sup> Compare *id.* at 39-45; 50-55 (citing studies from 2013 to 2016 documenting recent developments in four of the six categories of PCB treatment technologies) with HDR ENGINEERING, INC. TREATMENT TECHNOLOGY REVIEW & ASSESSMENT, 11-12; 48-50 (Dec. 4, 2013) (not mentioning these studies of PCB treatment technologies dating from 2013 and beyond).



effective remediation methods are highly sought after. Therefore, new methods and technologies to treat PCB contamination continue to be developed.”<sup>87</sup>

The State of Washington would like to get on with the business of implementation, as noted above. The tribes have also indicated their desire to move ahead and their willingness to work with the state toward implementing the new standards in innovative and effective ways. Reconsideration of these standards at the federal level should not now stand as an obstacle to this local effort. Rather, we should be permitted to join now to foster technological development and to ensure clean, fishable waters in Washington.

#### **V. Water Quality Standards for Washington Must Comport with the Constitution, Treaties, and Other Relevant Laws**

Water quality standards for Washington, whether set by the state or by EPA, must comport with the Constitution, treaties, and other relevant laws. In an attempt to avoid this legal reality, the Petition mischaracterizes the place of EPA guidance in the relevant legal hierarchy. The Petition also misrepresents the body of federal caselaw interpreting the fishing clause of the treaties between the U.S. and the tribes of the Pacific Northwest.

The Supremacy Clause of the U.S. Constitution plainly states:

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and *all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land*; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.<sup>88</sup>

In 1832, the U.S. Supreme Court affirmed in the fountainhead Indian law case *Worcester v. Georgia* that treaties between the United States and Indian nations indeed partake of this constitutional supremacy.<sup>89</sup> In the 1850s, the Indian nations of the Pacific Northwest entered into treaties ceding lands to the United States, while reserving a suite of important pre-existing rights, including their

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<sup>87</sup> VDEQ, PCB POLLUTION MINIMIZATION TECHNOLOGIES, at 45.

<sup>88</sup> U.S. Const. art. VI, clause 2 (emphasis added).

<sup>89</sup> *Worcester v. Georgia*, 31 U.S. (6 Pet.) 515, 519 (1832) (“The constitution [declares] treaties already made, as well as those to be made, the supreme law of the land . . .”). As the *Worcester* Court elaborated, “[s]o long as ... treaties exist, having been formed within the sphere of federal powers, they must be respected and enforced by the appropriate organs of the federal government.” *Worcester*, 31 U.S. (6 Pet.) at 594. Congress reflects this fundamental point in the Clean Water Act, expressly providing that the Act “shall not be construed as ... affecting or impairing the provisions of any treaty of the United States.” 33 U.S.C. §1371.

aboriginal rights to fish, hunt, and gather.<sup>90</sup> The Treaty of Point Elliott, for example, provides that “[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory....”<sup>91</sup> Although the precise language of the fishing clause varies somewhat in the different treaties with the tribes of the Pacific Northwest, U.S. courts have interpreted these provisions similarly to secure to the tribes a permanent, enforceable right to take fish throughout their fishing areas for ceremonial, subsistence and commercial purposes.<sup>92</sup> Moreover, the U.S. Supreme Court has long affirmed that all of the rights not expressly relinquished by the tribes were retained.<sup>93</sup> As it stated in 1905, the treaties represent “not a grant of rights to the Indians, but a grant of rights *from* them – a reservation of those not granted.”<sup>94</sup> That is, the fishing rights of the Northwest Treaty Tribes not only pre-date the treaties, but are protected by the treaties that are the supreme law of the land. Accordingly, and in keeping with the unique Indian law canons that govern courts’ construction of the treaties,<sup>95</sup> for more than a century, the courts have regularly interpreted the fishing right as more than just a naked right to engage in the activity of fishing; it is “a reserved right ... which exists in part to provide a volume of fish which is sufficient to the fair needs of the tribes.”<sup>96</sup>

EPA thus appropriately observed in its proposed rule:

In determining whether WQS comply with the CWA and EPA’s regulations, when setting criteria to support the most sensitive use in Washington, it is necessary to consider other applicable laws, including federal treaties. In Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes, including treaty reserved rights to fish at all usual and accustomed fishing grounds and stations in waters under state jurisdiction, which cover the majority of waters in the state. Such rights include not only a right to take those fish, but necessarily include an attendant right to not be exposed to unacceptable health risks by consuming those fish.<sup>97</sup>

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<sup>90</sup> FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW 1154-56 (2012 ed.). The tribes’ rights have both on- and off-reservation components.

<sup>91</sup> Treaty with the Duwamish, Jan. 22, 1855, U.S.-Duwamish, art. V, 12 Stat. 927 (1859).

<sup>92</sup> See, e.g., *United States v. Washington*, 384 F. Supp. 312, 401 (W.D. Wash. 1974); *Washington v. Washington State Commercial Passenger Fishing Vessel Ass’n*, 443 U.S. 658, 674-85 (1979).

<sup>93</sup> See COHEN, at 1156-57 (discussing this longstanding and central tenet of federal Indian law).

<sup>94</sup> *United States v. Winans*, 198 U.S. 371, 381 (1905) (emphasis added).

<sup>95</sup> According to the canons, treaties should be construed liberally in favor of Indian tribes; they should be construed as the Indians would have understood them; and any ambiguities should be resolved in the tribes’ favor. COHEN, at 113-19, 1156. (“The canons have quasi-constitutional status; they provide an interpretive methodology for protecting fundamental constitutive, structural values against all but explicit congressional derogation.”); *id.* at 118-19.

<sup>96</sup> See, e.g., *United States v. Washington*, 384 F. Supp. at 401; accord *United States v. Washington*, 573 F.3d 701, 704 (9th Cir. 2009).

<sup>97</sup> 80 Fed. Reg. at 55066 (citation omitted).

EPA's rationale here echoes exactly that of the courts, which have long recognized that the tribes' continued ability to consume fish for their own subsistence or to earn a livelihood by selling fish to others for their consumption was an essential point of the treaty guarantees.<sup>98</sup> As the U.S. Supreme Court observed in *Washington v. Washington State Commercial Passenger Fishing Vessel Association*, "[i]t is perfectly clear that the Indians were vitally interested in protecting their right to take fish at usual and accustomed places whether on or off the reservations, and that they were invited by the white negotiators to rely, and did in fact rely, heavily on the good faith of the United States to protect that right."<sup>99</sup> The Court found, moreover, that "Governor [Stevens'] promises that the treaties would protect that source of food and commerce were crucial in obtaining the Indians' assent."<sup>100</sup> Thus, as courts have emphasized, important among the myriad facets of tribes' reserved fishing rights is the role of fish as food for human consumption.<sup>101</sup> Fish that has been rendered unsafe due to toxic contamination is, obviously, not fit for human consumption.

The Petition, remarkably, portrays EPA's recognition of the need to "effectuate and harmonize" standards under the CWA with tribes' treaty-reserved fishing rights<sup>102</sup> as a "new" and "invented" "post-hoc rationalization."<sup>103</sup> Yet, the treaties have been in force since the 1850s. Federal caselaw upholding the treaties' status and import dates from the 19<sup>th</sup> and early 20<sup>th</sup> centuries. Both the state and EPA are bound by the Constitution and by the laws of the land, which include treaties with Indian nations. In administering the CWA, EPA cannot waive the Constitution, and cannot ignore the treaties and the body of federal caselaw interpreting the treaties. It simply does not have this authority.

In fact, the federal government has long acknowledged its obligation to work to further tribal self-determination and honor tribal treaty-secured and other rights. Every president since President Nixon has supported tribal self-determination and acknowledged the federal government's unique trust relationship with the tribes – a relationship that stems in part from the treaties and other sovereign compacts entered into by the U.S. and Indian nations.<sup>104</sup> Under President Reagan, EPA

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<sup>98</sup> For a discussion of the supporting caselaw, see, e.g., Federal Indian Law Professors, Comments on the United States Environmental Protection Agency's Proposed Rule: Revision of Certain Water Quality Criteria Applicable to the State of Washington, at nn. 28-35 and accompanying text (Dec. 28, 2015), EPA-HQ-OW-2015-0174-0258.

<sup>99</sup> 443 U.S. at 667.

<sup>100</sup> *Id.* at 676.

<sup>101</sup> *Accord Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin*, 653 F. Supp. 1420, 1426 (W.D. Wis. 1987) (By dint of the 1837 and 1842 treaties, the Chippewa were "guaranteed the right to make a moderate living off the land and from the waters in and abutting the ceded territory and throughout that territory by engaging in hunting, fishing, and gathering as they had in the past and by consuming the fruits of that hunting, fishing, and gathering or by trading the fruits of that activity for goods they could use and consume in realizing that moderate living").

<sup>102</sup> 81 Fed. Reg. at 85424.

<sup>103</sup> Petition, at 19.

<sup>104</sup> Message from the President of the United States Transmitting Recommendations for Indian Policy, H.R. Doc. No. 363, 91<sup>st</sup> Cong., 2d. Sess. (1970); 116 Cong. Rec. 23258.

first set forth its *EPA Indian Policy* in 1984.<sup>105</sup> This policy has been reaffirmed in subsequent administrations, irrespective of political party.<sup>106</sup> Its contours have been elaborated and refined over time, evolving in line with executive directives and developments in federal court caselaw interpreting the treaties.<sup>107</sup>

Against this backdrop, EPA correctly recognized that its general guidance is precisely that: general guidance. Yet the Petition repeatedly cites EPA's Ambient Water Quality Criteria Methodology (2000 AWQC Guidance) as purporting to give broad license to the state, and to authorize the state and EPA to take actions in contravention of the Constitution and tribal treaties. This turns the legal hierarchy on its head. Rather, the 2000 AWQC Guidance must be considered subsidiary to applicable sources of law, including the Constitution and tribal treaties. And it must be applied in accordance with the particular factual and legal circumstances pertaining to the water quality standards at issue – here, water quality standards for the state of Washington. EPA's 2000 AWQC Guidance acknowledges these points, expressly stating as much at the outset.<sup>108</sup>

EPA's rulemaking appropriately comprehends the subsidiary and general nature of its guidance, and the need to consider Washington's particular factual and legal circumstances. In proposing its rule for Washington, EPA observed that "the EPA's 2000 Human Health Methodology did not consider how CWA decisions should account for applicable reserved fishing rights, including treaty-reserved rights."<sup>109</sup> Indeed, EPA specifically stated at the time the 2000 AWQC Guidance was being drafted that "[a]s stated in the 1998 draft Methodology revisions, 'risk levels and criteria need to be protective of tribal rights under federal law (e.g., fishing, hunting, or gathering rights) that are related to water quality.' We believe the best way to ensure that Tribal treaty and other rights under Federal law are met, consistent with the Federal trust responsibility, is to address these

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<sup>105</sup> U.S. Environmental Protection Agency, *EPA Policy for the Administration of Environmental Programs on Indian Reservations* (November 8, 1984).

<sup>106</sup> See, e.g., U.S. Environmental Protection Agency, *Commemorating the 30th Anniversary of the EPA's Indian Policy*, Memorandum from Gina McCarthy to All EPA Employees, 1 (Dec. 1, 2014) (reiterating that "EPA must ensure that its actions do not conflict with tribal treaty rights" and stating that "EPA programs should be implemented to enhance the protection of tribal treaty rights and treaty-covered resources when we have the discretion to do so").

<sup>107</sup> See, e.g., U.S. Environmental Protection Agency, *Working Effectively with Tribal Governments: Resource Guide* at 49–52, 53 (Aug. 1998) (explaining the key principles underlying the application of tribal treaty rights, and noting that "[f]ederal, state, and local agencies need to refrain from taking actions that are not consistent with tribal rights wherever they exist").

<sup>108</sup> U.S. Environmental Protection Agency, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health 1-2 (2000)* [hereinafter *EPA, AWQC Guidance*], [http://water.epa.gov/scitech/swguidance/standards/upload/2005\\_05\\_06\\_criteria\\_humanhealth\\_method\\_complete.pdf](http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_complete.pdf) (making a disclaimer at the outset of its guidance to this effect: "This Methodology does not substitute for the CWA or EPA's regulations; nor is it a regulation itself. Thus, the 2000 Human Health Methodology cannot impose legally-binding requirements on EPA, States, Tribes or the regulated community, and may not apply to a particular situation based upon the circumstances.").

<sup>109</sup> 80 Fed. Reg. at 55068.

issues at the time EPA reviews water quality standards submissions.”<sup>110</sup> This case-by-case approach enables EPA to take into account particular local factual and legal circumstances as well as developments in the science and the law since the 2000 AWQC Guidance was finalized.<sup>111</sup>

In deriving human health criteria for Washington, EPA correctly stated that:

A majority of waters under Washington’s jurisdiction are covered by reserved rights, including tribal treaty-reserved rights. Many areas where reserved rights are exercised cannot be directly protected or regulated by the tribal governments and, therefore, the responsibility falls to the state and federal governments to ensure their protection. In order to effectuate and harmonize these reserved rights, including treaty rights, with the CWA, EPA determined that such rights appropriately must be considered when determining which criteria are necessary to adequately protect Washington’s fish and shellfish harvesting designated uses.<sup>112</sup>

EPA appropriately concluded that, as required by its implementing regulations, the HHC would need to support the most sensitive of Washington’s designated uses,<sup>113</sup> and thus not impair tribes’ treaty-secured rights to take fish for subsistence purposes.<sup>114</sup> As EPA noted, protecting this tribal population implements the 2000 AWQC Guidance recommendation “that priority be given to identifying and adequately protecting the most highly exposed population.”<sup>115</sup>

Notably, EPA’s application of its general guidance to Washington’s particular circumstances rests on findings that echo the state’s own. Washington itself has recognized that tribes’ adjudicated usual and accustomed areas cover virtually all of the waters over which the state claims jurisdiction under

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<sup>110</sup> 65 Fed. Reg. 66444, 66457 (Nov. 3, 2000).

<sup>111</sup> The Suquamish Tribe’s 2000 fish consumption survey, for example, post-dates studies cited in the 1998 Technical Support Document for the EPA’s 2000 AWQC Guidance. *Compare* Suquamish Survey with OFFICE OF SCIENCE AND TECHNOLOGY, U.S. ENVIRONMENTAL PROTECTION AGENCY, AMBIENT WATER QUALITY CRITERIA DERIVATION METHODOLOGY: HUMAN HEALTH, TECHNICAL SUPPORT DOCUMENT (1998). Both Ecology and EPA cited the Suquamish survey in deriving the FCR applicable for WQS in Washington.

<sup>112</sup> 80 Fed. Reg. at 55067 (citations and internal cross-references omitted).

<sup>113</sup> 40 C.F.R. 131.11(a).

<sup>114</sup> EPA has, at least since its 2000 AWQC Guidance, signaled that subsistence consumption needs to be protected in WQS for which the designated fish and shellfish harvesting uses encompass subsistence fishing. EPA, AWQC Guidance, at 1-12 & 1-13 (setting forth two national default fish consumption rates, one for the general population and one, at 142.4 grams/day, for “subsistence” consumers); *see also* U.S. Environmental Protection Agency Region X, Framework for Selecting and Using Tribal Fish and Shellfish Consumption Rates for Risk-Based Decision Making at CERCLA and RCRA Cleanup Sites for Puget Sound and the Strait of Georgia 1, 6-7 (Aug., 2007) (stating that “EPA believes that the rates developed from the [available Puget Sound Tribal studies] should be used in preference to an estimate of an average subsistence consumption rate, as recommended in the EPA AWQC methodology.”)

<sup>115</sup> 81 Fed. Reg. at 85424.

the CWA.<sup>116</sup> As Ecology stated in its final *Fish Consumption Rates Technical Support Document* prepared in support of its WQS rule, “Washington is home to 29 federally recognized and seven non-federally recognized Native American tribes (Governor’s Office of Indian Affairs, 2010). Traditional fishing areas for tribes cover essentially all of Washington.”<sup>117</sup>

Washington itself has recognized the need to manage its fisheries and undertake environmental regulation in a manner that is cognizant of tribes’ treaty-secured rights to harvest and consume fish and shellfish. Washington’s Department of Fish & Wildlife, for example, explains on its website that it co-manages salmon harvest and restoration with the tribes, in a relationship framed by Judge Boldt in *U.S. v. Washington* to uphold the tribes’ treaty-reserved rights.<sup>118</sup> Washington’s Sediment Management Standards (SMS), for example, direct that the cleanup level for human health “shall be calculated using reasonable maximum exposure scenarios that reflect the highest exposure that is reasonably expected to occur under current and potential future site use conditions,” and set a statewide default exposure scenario of “tribal consumption of fish and shellfish.”<sup>119</sup> The SMS further require Ecology to consider the “[h]istoric, current, and potential future tribal use of fish and shellfish from the general vicinity of the site” in selecting or approving exposure parameters used to calculate this scenario.<sup>120</sup> And Ecology’s final *Fish Consumption Rates Technical Support Document* introduced its scientific review of the available surveys of contemporary fish consumption in support of its revision to its WQS with the following “problem statement:”

Washington’s aquatic resources provide tremendous benefit to the people of the state. Large quantities of finfish and shellfish are caught each year, both recreationally and commercially, and many residents eat seafood harvested from our waters. *In addition, tribal populations enjoy treaty fishing rights, and harvesting and eating seafood plays a significant role in their cultures.* Finfish and shellfish are important parts of a healthy diet.

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<sup>116</sup> Insofar as the state asserts environmental regulatory authority over “the waters of Washington,” these waters are burdened by tribes’ pre-existing rights. For state recognition of this point, see, e.g., Washington State Governor’s Office of Indian Affairs, “Map of Reservations and Ceded Lands,” available at [http://www.goia.wa.gov/tribal\\_gov/documents/Tribal\\_Cedres.pdf](http://www.goia.wa.gov/tribal_gov/documents/Tribal_Cedres.pdf); see also, Washington State Department of Transportation, Model Comprehensive Tribal Consultation Process for National Environmental Policy Act, Appendix B (July 2008) available at <http://www.wsdot.wa.gov/environment/tribal> (summarizing adjudicated “usual and accustomed” areas for western Washington tribes).

<sup>117</sup> Washington Department of Ecology, Fish Consumption Rates Technical Support Document Version 2.0 (Final) 18 (Jan. 2013) <https://fortress.wa.gov/ecy/publications/publications/1209058.pdf> (emphasis added).

<sup>118</sup> Washington Department of Fish & Wildlife, How Tribes and State Co-Manage Salmon and Steelhead <http://wdfw.wa.gov/conservation/salmon/co-management/index.html> (stating that “Washington’s salmon and steelhead fisheries are managed cooperatively in a unique government-to-government relationship ... A 1974 federal (*U.S. v. Washington*) court case (decided by U.S. District Court Judge George Boldt) re-affirmed the tribe’s [sic] rights to harvest salmon and steelhead and established them as co-managers of Washington fisheries”).

<sup>119</sup> Sediment Management Standards, WAC 173-204-561(2)(b).

<sup>120</sup> *Id.*

Polychlorinated biphenyls (PCBs), dioxins, mercury, and other persistent chemicals can accumulate in fish tissue and harm the health of people who consume fish. Those who may be particularly vulnerable include adults who eat large amounts of finfish or shellfish, as well as children and other sensitive populations. Current fish consumption rates used by Ecology to make regulatory decisions are not consistent with data about fish consumption by Washington populations for which fish consumption survey information is available.<sup>121</sup>

Further, EPA's rule enlists "Washington-specific human health criteria inputs" that are identical to those selected by Washington for the two key parameters used to derive HHC – the fish consumption rate and the cancer risk level. EPA's FCR of 175 gram/day is based on the wealth of local and regional survey data documenting contemporary<sup>122</sup> consumption rates for tribes and other higher-consuming populations. These data were analyzed by and relied upon by Ecology in deriving the HHC that it submitted, using a FCR of 175 grams/day. EPA's cancer risk level of 1 in 1,000,000, that is,  $1 \times 10^{-6}$  is based on the level long embraced by Washington. Specifically, for more than two decades, Washington's WQS required that criteria for carcinogens "shall be selected such that the upper-bound excess cancer risk is less than or equal to 1 in 1,000,000."<sup>123</sup> Ecology retained this cancer risk level generally in the HHC it submitted.<sup>124</sup>

In sum, the Petition's request for reconsideration of EPA's decisions respecting WQS for Washington is premised on arguments that purport to elevate guidance over the Constitution, treaties, and other laws that are relevant to standard-setting under the CWA in this context, and on arguments that misrepresent the relevant federal caselaw regarding interpretation of the treaty fishing clause. These arguments are without merit, and do not provide a rational basis for reconsideration.

## VI. Conclusion

NWIFC respectfully urges that EPA deny the Petition's request to undo the extensive work that has been done to update WQS for Washington. The state is not seeking to discard this work – it has not joined industry's attempt to rehash the arguments that have already been considered at length in robust state and federal processes. Rather than embark on yet another round of rulemaking, the

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<sup>121</sup> Washington Department of Ecology, Fish Consumption Rates Technical Support Document Version 2.0 Final xiii (Jan. 2013) <https://fortress.wa.gov/ecy/publications/publications/1209058.pdf> (emphasis added).

<sup>122</sup> The Petition mistakenly characterizes this FCR as "unsuppressed." Petition, at 25. While EPA's rule appropriately recognizes the need to account for suppression effects, the 175 grams/day figure is drawn from the CRITFC survey of *contemporary* fish intake. See 81 Fed. Reg. at 85426 ("A FCR of 175 grams/day approximates the 95<sup>th</sup> percentile consumption rate of surveyed tribal members from the CRITFC study.") For a thorough discussion of the issue of suppression in this context, see NWIFC, Comments on Ecology's Draft Rule, at 13-30, & App. C.


<sup>123</sup> Wash. Admin. Code 173-201A-240(6) (2015).

<sup>124</sup> As discussed above, Ecology departed from its longstanding judgement regarding the "acceptable" cancer risk level for a few contaminants of concern, notably PCBs.

tribes, like Washington, would like to look toward the future. The EPA should not now introduce obstacles to progress at the local level by the state and its partners.<sup>125</sup> The Northwest Treaty Tribes are optimistic that, with our combined energies bent toward innovative and effective implementation, we can have “fishable” waters throughout Washington – waters that can support harvest and consumption not only by tribal people but by non-tribal people as well.

Our tribal leaders look forward to engaging you and your team to discuss this matter and the appropriate actions to protect our precious environment and resources.

Sincerely,



Lorraine Loomis  
Chairperson

Enclosure: Northwest Indian Fisheries Commission, Comments on the Washington Department of Ecology’s 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington Water Quality Standards (April 20, 2016).

cc: Craig Alexander, U.S. Department of Justice  
Paul Winters, Office of Management and Budget  
Michelle Pirzadeh, U.S. Environmental Protection Agency, Region 10  
Maia Bellon, Washington State Department of Ecology  
Chairs of the NWIFC Member Tribes

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<sup>125</sup> Indeed, this EPA has itself recently indicated its interest in moving on: in May, 2017, it relied upon having these updated HHC in force and cited their function in addressing toxic contamination in Washington waters among its reasons for denying an environmental group’s request for rulemaking on human health and aquatic life criteria. Letter from Michael H. Shapiro, Acting Assistant Administrator, U.S. Environmental Protection Agency, to Nina Bell, Executive Director, Northwest Environmental Advocates (May 31, 2017).



Message

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**From:** Green, Jennifer [jgreen@nwifc.org]  
**Sent:** 7/10/2017 10:54:57 PM  
**To:** Pruitt, Scott [Pruitt.Scott@epa.gov]  
**CC:** craig.alexander@usdoj.gov; paul\_a\_winters@omb.eop.gov; Pirzadeh, Michelle [Pirzadeh.Michelle@epa.gov]; Maia Bellon [maib461@ecy.wa.gov]; (Group) Chairman [chairman@nwifc.org]; Catherine O'Neill [coneill@nwifc.org]; Parker, Justin [jparker@nwifc.org]; Lorraine Loomis [lloomis@skagitcoop.org]; fwilshus@nwifc.org; Clerical Admin [Chron@nwifc.org]  
**Subject:** Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal WQ Criteria Applicable to WA, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.  
**Attachments:** NWIFC Petition Response July 10, 2017.pdf; NWIFC Petition Response July 10, 2017 Enclosure NWIFC Comments Re WA WQS 4.20.16.pdf

Attached is a letter from Lorraine Loomis the Northwest Indian Fisheries Commission Chairperson regarding a **Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal Water Quality Criteria Applicable to Washington, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.** as well as the enclosure.

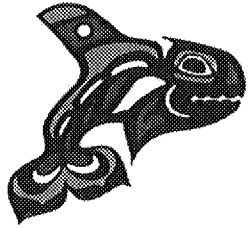
If you have any questions please contact Fran Wilshusen at [360-438-1180](tel:360-438-1180) or by email at [fwilshus@nwifc.org](mailto:fwilshus@nwifc.org).

Thank you.

--

**Jennifer Green**  
**Clerical Lead**  
**NWIFC**  
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# Northwest Indian Fisheries Commission

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FAX # 753-8659

April 20, 2016

Maia Bellon, Director  
Washington Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600

ATTN: Water Quality Program  
[swqs@ecy.wa.gov](mailto:swqs@ecy.wa.gov)  
Becca Conklin

**RE: Comments on the Washington Department of Ecology 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington State Water Quality Standards**

Dear Director Bellon:

Please find enclosed comments regarding the Department of Ecology's (Ecology) Draft Rule for Human Health Criteria (HHC) and Implementation Tools in Washington State's Water Quality Standards. The attached comments are submitted on behalf, and at the behest of the 20 member tribes of the Northwest Indian Fisheries Commission (NWIFC).<sup>1</sup> The member tribes of the NWIFC have constitutionally protected, treaty-reserved rights to harvest, consume, and manage fish and shellfish in their usual and accustomed areas. The attached comments are submitted to ensure protection of those reserved rights and the health of tribal members.

Tribes strongly agree with the US Environmental Protection Agency's formal determination that the "existing criteria are not protective of the designated uses," and therefore "new or revised WQS [water quality standards] for the protection of human health are necessary to meet the requirements of the CWA [Clean Water Act] for Washington."<sup>2</sup> The EPA published this determination as part of the proposed rule to amend the National Toxics Rule for water quality criteria applicable to Washington in September, 2015. Tribes support the EPA proposed rule as it protects designated uses of water, including public health and treaty-reserved rights, while the state proposal fails to meet this delegated responsibility. The state proposal adopts the

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<sup>1</sup> Hoh Tribe, Jamestown S'Klallam, Lower Elwha Klallam Tribe, Lummi Nation, Makah Tribe, Muckleshoot Indian Tribe, Nisqually Indian Tribe, Nooksack Indian Tribe, Port Gamble S'Klallam Tribe, Puyallup Tribe of Indians, Sauk-Suiattle Indian Tribe, Skokomish Indian Tribe, Squaxin Island Tribe, Stillaguamish Tribe of Indians, Suquamish Tribe, Swinomish Tribal Community, Tulalip Tribe, Upper Skagit Tribe, Quinault Nation, Quileute Nation.

<sup>2</sup> 80 F.R. 550066 (Sept. 14, 2015)

EPA proposal for a fish consumption rate of 175 grams per day and a cancer risk rate of one-per-million ( $10^{-6}$ ), but the state continues to diminish these protections through other provisions of the proposed rule.

The attached comments<sup>3</sup> and all materials referenced demonstrate that the state of Washington's proposed rule fails to protect designated uses of water in several important ways. We call your attention to three of the major deficiencies. First, the state has selectively adopted the revised national 304(a) criteria, excluding relative source contribution and bioaccumulation criteria. The state fails to account for all sources of pollution, and does not use updated scientific information to analyze how pollutants accumulate in the food chain. Second, the state sets aside several highly toxic chemicals for special treatment to exempt them from tighter standards, leaving these chemicals at status quo, or even allowing discharge levels to increase. These exemptions are clearly directed toward alleviating the impact of tighter chemical criteria on specific industries, yet the Clean Water Act mandates that public health must be the overriding consideration in the establishment of standards. Third, variances, compliance schedules, and other implementation provisions will allow permittees to violate water quality standards for potentially long and unspecified amounts of time.

The Clean Water Act also creates a legal duty upon EPA to act promptly to develop water quality standards after a determination of necessity is made. The Department of Ecology has asserted that the EPA's proposed rule imposes on the state's ongoing process to establish water quality standards.<sup>4</sup> Given that the state is already under federal rule, and has delayed adoption of state standards for years, Ecology's assertion that the EPA is imposing on the state is inappropriate. The state has knowingly delayed revising an under-protective fish consumption rate for Washington for many years, has delayed adoption of new standards at the requests of regulated industry, and has repeatedly failed to meet its own deadlines for rule-making. Immediate action by EPA is clearly justified and legally mandated regardless of state action on a draft rule for water quality standards.

Tribes concur that water quality discharge standards are only a part of the toxic chemical problem in the state of Washington, and that more efforts toward source control and toxic cleanup are needed. However, the standards are an essential anchor for determining where and how to deploy toxic reduction efforts, and monitor improvement.

Tribes look forward to working with you on an overall effort to reduce existing and future pollution in Washington. Setting protective water quality standards will be an essential step in that process, and it is our hope that the enclosed comments will help the Department of

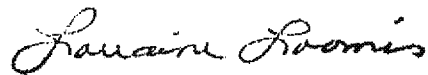
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<sup>3</sup> All materials cited in the attached comments are hereby incorporated into the rulemaking docket by reference. All materials can be provided to the Department of Ecology by request, and/or will be made available via hand delivered digital file submitted to Ecology on March 23rd, 2015.

<sup>4</sup> Letter from Maia Bellon, Director of the Department of Ecology, to EPA Administrator Gina McCarthy. December 21, 2015

Ecology to improve on the proposed rule, protect tribes and their treaty-reserved rights, and ensure protection of the designated uses of water.

Sincerely,

A handwritten signature in cursive script, reading "Lorraine Loomis".

Lorraine Loomis,  
Chairperson

cc: NWIFC Commissioners

Columbia River Intertribal Fish Commission

Gina McCarthy, EPA Headquarters, Administrator

Dennis McLerran, EPA Region 10, Administrator

Daniel Opalski, EPA Region 10, Director of the Office of Water and Watersheds

# Comments on the State's Proposed 2016 Rule for Human Health Criteria and Implementation Tools in WA State Water Quality Standards

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**TO:** Washington Department of Ecology, Water Quality Program

**ATTN:** [swqs@ecy.wa.gov](mailto:swqs@ecy.wa.gov)

Becca Conklin

Washington State Department of Ecology

Water Quality Program

P.O. Box 47600, Olympia, WA 98504-7600

**RE:** Proposed Amendments to Water Quality Standards for Surface Waters of the State of Washington – Chapter 173-201A WAC

**SUBM:** April 20, 2016



6730 Martin Way E. Olympia, WA 98516-5540

# TABLE OF CONTENTS

I.	Introduction and general comments .....	3
A.	Relationship to Federal Rule Promulgation .....	3
B.	Undue Delay by the State of Washington in Protecting Designated Uses .....	5
C.	Environmental Justice and Tribal Exposure to Toxic Chemicals .....	5
D.	Treaty-Reserved Rights and Washington’s Designated Uses .....	6
E.	Fish Consumption and Tribal Lifeways .....	8
II.	Human Health Criteria (HHC) .....	12
A.	Fish Consumption Rates .....	13
B.	Cancer Risk Level .....	31
C.	Relative Source Contribution (RSC) .....	35
D.	Body Weight .....	40
E.	Drinking Water Intake .....	42
F.	Reference Dose and Cancer Slope Factor .....	42
G.	Bioaccumulation Factors (BAF) .....	43
III.	CHALLENGING Chemicals and other provisions .....	47
A.	Arsenic .....	47
B.	Mercury .....	60
C.	Polychlorinated Biphenyls (PCBs) .....	68
D.	Dioxins .....	73
E.	Federally Required Protection of Downstream Uses .....	74
IV.	IMPLEMENTATION TOOLS .....	77
A.	Variances .....	78
B.	Compliance Schedules .....	89
C.	Intake Credits .....	95
D.	Combined Sewer Overflow Treatment Plant Regulations .....	100
V.	Appendices .....	104
A.	History of Delay by Washington State for Establishing Human Health Criteria .....	105
B.	Chemical Comparison Spreadsheets .....	121
C.	Fish Consumption Rates—Description of studies and definition of terms .....	128
D.	References and Source Documents .....	146

## I. INTRODUCTION AND GENERAL COMMENTS

The attached comments to the State's Draft 2016 Rule for Human Health Criteria and Implementation Tools in WA State Water Quality Standards were prepared on behalf and at the behest of the 20 member treaty tribes of the Northwest Indian Fisheries Commission, with contributions from other tribes in Washington and Oregon. The submission of this set of comments was approved at the March 22, 2016 meeting of the Northwest Indian Fisheries Commission. All materials cited in this document are hereby incorporated in the rulemaking document by reference. These materials can be made available upon request. Additionally, a digital file will be hand delivered to the Department of Ecology prior to the closure of the public comment period, which includes references cited and additional materials that support the statements and positions herein. These additional materials are provided for Ecology's further consideration in the course of rulemaking decisions. A copy of this file will be stored at the Northwest Indian Fisheries Commission and can be made available for duplication should the original become unavailable. These comments do not supercede the input or recommendations submitted by our individual member tribes to the rule docket.

The enclosed comments pertain to the Washington Department of Ecology's proposed rule for state water quality standards filed in February, 2016 and associated supporting documents. The comments and all materials referenced and/or attached constitute a record demonstrating that the state of Washington's proposed rule fails to protect beneficial uses of water under the Clean Water Act, a responsibility delegated to the state from the US Environmental Protection Agency (EPA). Moreover, the state's proposal fails to respect the state's obligation to honor the treaty rights of Pacific Northwest tribes.

### A. Relationship to Federal Rule Promulgation

The EPA issued a Proposed Rule for "Revision of Certain Water Quality Criteria Applicable to the State of Washington," Docket ID No. EPA-HQ-OW-2015-0174 on September 14, 2015.<sup>1</sup> Tribes continue to advocate for the promulgation of the proposed federal rule without delay. Federal action was taken because of the unnecessary delay by the state of Washington and EPA's

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<sup>1</sup>80 F.R. 550066 (Sept. 14, 2015). Unless otherwise noted, the terms "EPA proposed rule" or "proposed federal rule" refers to this citation.

determination, published as part of the proposed federal rule, that existing human health criteria applicable to Washington are not protective of designated uses of waters in the state of Washington.

NWIFC and member tribes commented extensively on the proposed federal rule in December, 2015.<sup>2</sup> EPA has appropriately included the safe harvest of treaty-reserved resources as designated uses in the regulation of water quality. Contamination of fisheries resources precludes tribal citizens from the exercise of treaty-reserved rights to harvest and consume fish, and creates disproportionate loss to tribal communities that are excluded from the nutritional, cultural, and economic uses of these resources. Tribes concur with EPA's approach for deriving regional fish consumption rates using data from tribal studies in the Pacific Northwest, while noting that contemporary fish consumption has been suppressed by loss of resource, pollution, and other factors. Tribes further note that studies of contemporary fish consumption are not representative of heritage levels of fish consumption reserved by treaty, as was acknowledged by EPA.

Along with the use of a regional fish consumption rate derived from tribal studies, tribes support the EPA's decision to update human health criteria for Washington using revised national recommended 304(a) criteria, adopted in 2015.<sup>3</sup> These recommendations reflect current best available science and rigorously vetted technical information. In contrast, Washington State has chosen to adopt only some of the revised national criteria, generally to the detriment of the protectiveness of the water quality standards. As a result, the proposed EPA rule is more protective of the designated uses, while Washington's rule falls short of adequately reflecting likely exposure and toxicity of the chemical parameters, and therefore sets standards that are under-protective.

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<sup>2</sup> Northwest Indian Fisheries Commission; December 21, 2015. Comments on the Proposed Federal Rule, Docket ID No. EPA-HQ-OW-2015-0174, Revision of Certain Water Quality Criteria Applicable to Washington. NWIFC comments on the proposed federal rule and associated references are hereby attached and incorporated into the current subject comments on the Washington Department of Ecology 2016 proposed rule for human health criteria and implementation tools.

<sup>3</sup> U.S. Environmental Protection Agency, Final Updated Ambient Water Quality Criteria for the Protection of Human Health. FR Doc. 2015-15912 (June 29, 2015), EPA-HQ-OW-2014-0135-0155



## **B. Undue Delay by the State of Washington in Protecting Designated Uses**

Tribes and tribal consortiums have provided information to the state for over 20 years documenting that the fish consumption rate (FCR) used in state standards is grossly under-representative of consumption rates in tribal communities. Tribes raised the issue repeatedly in Triennial Reviews of state water quality standards over the last decade, and the state acknowledged and committed to addressing the deficiency in the 2010 review. Since 2011, the state has repeatedly delayed or changed course in the development of a FCR in state standards, largely at the behest of industry. The Department of Ecology has pivoted the rule-making process back and forth between the Water Quality Program and the Toxics Cleanup Program. Following the abandonment of a numerical FCR in draft Sediment Management Standards in July 2012, the state breached their commitment to develop the FCR and other human health criteria in water quality standards numerous times. Ecology published an inadequate rule in January, 2015 and subsequently withdrew the proposal in August. The state's failure to discharge their delegated duties under the Clean Water Act has made it necessary for the EPA to promulgate revised criteria under the National Toxics Rule (NTR) for Washington (proposed federal rule).

The enclosed Appendix A details the long history of undue delay by the state of Washington in adopting revised human health criteria. These delays have subjected tribal communities to continued harm from exposure to toxic chemicals.

## **C. Environmental Justice and Tribal Exposure to Toxic Chemicals**

The National Environmental Justice Advisory Council issued a report in 2002 on Fish Consumption and Environmental Justice describing the issues related to national pollutant standards and fish consumption by tribes, low-income groups, and people of color. Key findings in the report were: testimonials that tribal identity and fish consumption are culturally inseparable for many tribal communities; evidence that tribes face multiple health risks from both economic disadvantage and the loss or contamination of fisheries resources; and "where human health criteria are established based upon consumption of toxic chemicals that bioaccumulate in fish, regulators should employ appropriate human fish consumption rates and bioaccumulation factors, including cultural practices (*e.g.*, species, fish parts used, and manner

of cooking and preparation) of tribes and other indigenous and environmental justice communities using the waterbody.”<sup>4</sup>

The elevated health risk to tribal members from exposure to pollutants is considered to be an unacceptable impairment of treaty reserved rights by tribes. The state of Washington must utilize exposure parameters in the calculation of human health criteria that fully protect tribal members’ health, continued cultural, spiritual, and economic practices, and the treaty-reserved rights to exercise them safely.

#### **D. Treaty-Reserved Rights and Washington’s Designated Uses**

When the United States entered into treaties with the tribes,<sup>5</sup> it bound itself to permanently protect the tribes’ right to take fish.<sup>6</sup> At treaty times, “fish was the great staple of [Indians] diet and livelihood,”<sup>7</sup> and fishing rights “were not much less necessary to the existence of the Indians than the atmosphere they breathed.”<sup>8</sup> Thus, “the Indians viewed a guarantee of permanent fishing rights as an absolute predicate to entering into a treaty,”<sup>9</sup> and in providing those guarantees “[i]t never could have been the intention of Congress that Indians should be excluded from their ancient fisheries . . . .”<sup>10</sup>

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<sup>4</sup> National Environmental Justice Advisory Council, 2002. Fish Consumption and Environmental Justice: A Report Developed from the National Environmental Justice Advisory Committee Meeting of December 3-6, 2001

<sup>5</sup> See, e.g., Treaty of Medicine Creek, 10 Stat. 1132-37, December 26, 1854, proclaimed April 10, 1855; Treaty of Point Elliott, 12 Stat. 927-32, January 22, 1855; proclaimed April 11, 1859; Treaty of Point No Point, 12 Stat. 933-37, January 26, 1855, proclaimed April 29, 1859; Treaty of Makah, 12 Stat. 939-43, January 31, 1855, proclaimed April 18, 1859; Treaty of Yakama, 12 Stat. 951-56; June 9, 1855; proclaimed April 18, 1859; Treaty of Olympia, 12 Stat. 971-74, July 1, 1855 and January 25, 1856; proclaimed April 11, 1859.

<sup>6</sup> See, e.g., Treaty of Point Elliott, 12 Stat. 927, Art. 5 (“The right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory .... ”); see also Treaty of Point No Point, 12 Stat. 933, Art. 4; Treaty of Medicine Creek, 10 Stat. 1132, Art. 3.

<sup>7</sup> *Washington v. Washington State Commercial Passenger Fishing Vessel Ass’n*, 443 U.S. 658 at 665 n.6 (citations and internal quotation marks omitted).

<sup>8</sup> *United States v. Winans*, 198 U.S. 371, 381 (1905); *United States v. Michigan* (“*Michigan f*”), 471 F. Supp. 192, 213, 224, 256-57 (W.D. Mich. 1979), *aff’d as modified*, 653 F.2d 277 (6th Cir. 1981).

<sup>9</sup> *United States v. Washington*, 873 F.Supp. 1422 at 1437 (W.D. Wash. 1994).

<sup>10</sup> *Fishing Vessel*, 443 U.S. at 666-67 n.9, 700 (citation and internal quotation marks omitted).

While the precise language of the fishing rights provisions varies among treaties, federal courts have interpreted those provisions commensurately, as securing to the tribes permanent, enforceable rights to take fish throughout their fishing areas for subsistence, ceremonial, and commercial purposes.<sup>11</sup>

These rights have been recognized because they are essential to fulfill the treaties' purpose to "protect that source of food and commerce [which] were crucial in obtaining the Indians' assent."<sup>12</sup> It was the United States' intent, "and the Tribes' understanding, that they would be able to meet their own subsistence needs forever."<sup>13</sup> "I want that you shall not have simply food and drink now but that you may have them forever."<sup>14</sup> "It was thus the right to take fish, not just the right to fish, that was secured by the treaties."<sup>15</sup>

In the context of the Clean Water Act, this translates into obligations to ensure that water quality standards are set to levels that allow the continued safe harvest as promised in the treaties, and that such standards are implemented in a manner that will not render treaty rights inconsequential. Therefore, in deriving human health criteria, perpetuation of the safe take of treaty-reserved fish and shellfish is part and parcel with protecting the designated and the beneficial uses of fishable, drinkable waters, and the protection of human health. This approach harmonizes the CWA with EPA's fiduciary obligations, thus allowing both water quality standards and CWA implementation to support treaty right protection and not undermine it.

Treaty-reserved rights must be considered in the derivation of human health criteria and implementation tools in Washington State. The state retains a delegated responsibility under the Federal Clean Water Act to protect designated uses, which coincide with treaty-reserved rights, and includes downstream uses in Tribal waters and in the state of Oregon.

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<sup>11</sup> See, e.g., *Fishing Vessel*, 443 U.S. at 678-79; see also *Muckleshoot v. Hall*, 698 F. Supp 1504, 1513-14 (W.D. Wash. 1988); *United States v. Oregon*, 718 F.2d 299,305 (9th Cir. 1983) (holding that "the court must accord primacy to the geographical aspect of the treaty rights"); *Confederated Tribes of the Umatilla Indian Reservation v. Alexander*, 440 F. Supp. 553, 555-56 (D. Or. 1977) (declaring proposed - construction of a federal dam to be unlawful where the dam would have inundated traditional fishing areas of the Umatilla Tribe. Such areas may even include usual and accustomed sites outside of ceded territories. See *Seufert Bros. Co. v. United States*, 249 U.S. 194, 198-99 (1919).

<sup>12</sup> *United States v. Washington*, 20 F. Supp. 3d. 828, 889 citing *State of Washington, et al., v. Washington State Commercial Passenger Fishing Vessel Association, et al.*, 443 U.S. 658 (1979) (emphasis added by Judge Martinez)

<sup>13</sup> *United States v. Washington*, 20 F.Supp.3d,889 Subproceedings No 01-1 (Culverts)(W.D. Wash 2007).

<sup>14</sup> 20 F. Supp.3d 889, 898 citing Decl. of Richard White, DKT. #296, ¶¶13, 14, which quotes Governor Stevens (emphasis added by Judge Martinez).

<sup>15</sup> Id at 898

## E. Fish Consumption and Tribal Lifeways

Fish consumption is a cultural, nutritional, and economic necessity, as well as a treaty right for the tribes of the Pacific Northwest. Toxic contamination of fisheries resources works in contravention of the right of tribal people to harvest fish that they may safely consume, a right that has been nationally and internationally recognized.

### 1. *The contamination of fisheries resources harms tribal communities.*

Tribal members live compounded risk scenarios since they face lifetime exposure to pollutants through the ingestion of drinking water and consumption of local fish and shellfish. These fisheries resources are harvested from usual and accustomed fishing areas in Washington's inland and nearshore waters as part of tribal cultural, spiritual, and economic lifeways. Many tribal members consume fish/shellfish daily, often at multiple meals, throughout their lives—beginning with *in utero* exposure from the mother all the way through their elder years.<sup>16</sup> Tribes also exercise traditional practices for processing and consuming fish that are not typically included in exposure risk studies; such studies thereby under-represent potential exposure.<sup>17</sup>

For additional discussion on the harm to tribal communities, please refer to the comments submitted previously to the state of Washington on the 2015 proposed rule and the EPA on the federal rule promulgated in September.<sup>18, 19</sup>

- a. **Tribal lifeways of the Pacific Northwest are culturally synonymous with fish consumption. When fisheries are limited or closed due to toxic contamination<sup>20</sup>, tribes lose access to a resource that is their lifeway and livelihood.** Tribes have documented the preference of many tribal members to consume contaminated fish and shellfish, rather than lose the opportunity to consume their traditional food. The toxic contamination of fisheries puts tribal treaty rights at risk. Numerous

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<sup>16</sup> O'Neill, Catherine, 2007. Protecting the Tribal Harvest: The Right to Catch and Consume Fish, 22 *J. ENVTL. L. & LITIG.* 131 (2007). <http://digitalcommons.law.seattleu.edu/faculty/542>

<sup>17</sup> NEJAC 2002. Id.

<sup>18</sup> Northwest Indian Fisheries Commission; March 23, 2015. Comments on the State's Draft Rule for Human Health Criteria and Implementation Tools in Water Quality Standards.

<sup>19</sup> Northwest Indian Fisheries Commission; December 21, 2015. Comments on the Proposed Federal Rule, Docket ID No. EPA-HQ-OW-2015-0174, Revision of Certain Water Quality Criteria Applicable to Washington.

<sup>20</sup> WA Department of Health. 2015. Fish Consumption Advisories. <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories>

articles describe the reliance of tribes on fishing and fish consumption for tribal lifeways, and the potential harm from exposure to toxic chemicals via the fish consumption pathway.<sup>21 22 23 24 25</sup>

**b. Tribal communities and people are highly reliant on the nutritional benefits of abundant and healthful fisheries resources.** The University of Washington School of Public Health has analyzed many of the relative health benefits and risks of eating fish.<sup>26</sup> Although the nutritional benefits are high, health risks are more pronounced for children, infants, developing embryos, and women of child bearing age, particularly in high fish-consuming communities.<sup>27 28 29</sup> In at least one tribal dietary study in Puget Sound, tribal children have been shown to consume fish at over three times the rate of adults, relative to body weight.<sup>30</sup> Many of these studies were

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<sup>21</sup> Harris, S.G. and B.L. Harper, 1997. A Native American Exposure Scenario. Risk Analysis 17:6, 789-795. December, 1997.

<sup>22</sup> Donatuto, J. and B.L. Harper, 2008. Issues in Evaluating Fish Consumption Rates in Native American Tribes. Risk Analysis 28:6, 1497-1506. December, 2008.

<sup>23</sup> O'Neill, C.A. 2000. Variable Justice: Environmental Standards, Contaminated Fish, and "Acceptable" Risk to Native Peoples, Stan. Env'tl, L.J. 3,37,46-51 (2000)

<sup>24</sup> O'Neill, C.A. 2007. Protecting the Tribal Harvest: the Right to Catch and Consume Fish. J Environmental Law Litigation 22:131-151 (2007)

<sup>25</sup> O'Neill, C.A. 2013. Fishable Waters. American Indian Law Journal Vol 1, Issue 2

<sup>26</sup> Faustman, E.M. 2011. What's the Public Health Issue and Why Is It Important? Presentation at the Washington Department of Ecology Technical Workshop on Fish Consumption in Washington, December 12, 2011. [http://www.ecy.wa.gov/toxics/docs/20111212\\_fishworkshop\\_faustman.pdf](http://www.ecy.wa.gov/toxics/docs/20111212_fishworkshop_faustman.pdf)

<sup>27</sup> Hoover, 2013. Cultural and health implications of fish consumption advisories in a Native American community. Ecological Processes 2013, 2:4

<sup>28</sup> Tsuchiya, Hardy, Burbacher, Faustman and Marien, 2008. Fish intake guidelines: incorporating n-3 fatty acid intake and contaminant exposure in the Korean and Japanese communities. Am Jrnl Clinical Nutrition 2008;87: 1867-75. American Society for Nutrition

<sup>29</sup> US Environmental Protection Agency, 2008. Child-Specific Exposure Factors Handbook; Chapter 10, Intake of Fish and Shellfish. <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=199243>

<sup>30</sup> U.S. Environmental Protection Agency (EPA). (2013) Reanalysis of fish and shellfish consumption data for the Tulalip and Squaxin Island Tribes of the Puget Sound Region: Consumption Rates for Consumers Only. National Center for Environmental Assessment, Washington, DC; EPA/600/R-06/080F

described in the Department of Ecology's technical workshop on fish consumption, held at the University of WA campus in December, 2011.<sup>31</sup>

- c. **The loss of consumable fisheries resources due to toxic contamination affects tribes economically.** The seafood industry in Washington is a major economic sector in the state of Washington.<sup>32 33</sup> Toxic contamination of fisheries resources generates economic losses to tribes in several ways: First, tribes may be precluded from harvesting fish for their personal use, necessitating a cost to purchase fish or other food as substitution for what they could have caught. Second, tribes may not be able to sell fish that they have lawfully harvested in accord with treaty rights and fishing management plans because of closed areas, contaminated product, or even the perceived potential for contaminated product by consumers. Fishing closures and the inability to market product precludes tribes from their livelihood. Third, tribal fishers experience secondary economic impacts from being forced to travel to alternative sites in order to exercise fishing rights. A fourth economic impact come from the potential costs of health impacts from prolonged exposure to toxic chemicals.

The loss of revenue from product contaminated with toxic chemicals was illustrated in late 2013 when China banned all imports of shellfish from the West Coast due to arsenic contamination.<sup>34</sup>

*"China has suspended imports of shellfish from the West Coast of the United States – an unprecedented move that cuts off a \$270 million Northwest industry from its biggest export market. China said it decided to impose the ban after recent shipments of geoduck clams from Northwest waters were found by its own government inspectors to have high levels of arsenic... (Campbell/KCTS9, 2013)"*<sup>35</sup>

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<sup>31</sup> Washington Department of Ecology, December 2011. Technical Workshop on Fish Consumption in Washington, Summary. [http://www.ecy.wa.gov/toxics/docs/20111212\\_fishworkshop\\_summary.pdf](http://www.ecy.wa.gov/toxics/docs/20111212_fishworkshop_summary.pdf)  
[http://www.ecy.wa.gov/toxics/fish\\_publicinvolvement.html](http://www.ecy.wa.gov/toxics/fish_publicinvolvement.html)

<sup>32</sup> WA Department of Fish and Wildlife, 2010. Fish, Wildlife, and Washington's Economy. Olympia, WA.  
[http://wdfw.wa.gov/publications/01145/wdfw\\_01145.pdf](http://wdfw.wa.gov/publications/01145/wdfw_01145.pdf)

<sup>33</sup> National Marine Fisheries Service, NOAA Office of Science and Technology. 2011. Fisheries Economics of the United States 2011, Pacific Region Summary.  
<http://www.st.nmfs.noaa.gov/Assets/economics/documents/feus/2011/FEUS2011%20-%20Pacific.pdf>

<sup>34</sup> Garnick, Coral. December 20, 2013. State closes geoduck harvest after China ban. Seattle Times.  
[http://seattletimes.com/html/business/technology/2022497142\\_geoduckarsenicxml.html](http://seattletimes.com/html/business/technology/2022497142_geoduckarsenicxml.html)

<sup>35</sup> Campbell, Katie. December 12, 2013. China imposes first-ever West Coast shellfish ban. KCTS9

- d. **Fish consumption has been regionally, nationally, and internationally recognized as part of the basic right for indigenous people to be secure in their means of sustenance.** <sup>36, 37,38</sup> The cultural value of fish consumption in Asian and Pacific Islander communities has also been recognized in the Pacific Northwest region. Tribes of the Pacific Northwest have been united in their support of water quality standards that will protect the health of tribal people in the exercise of fishing rights.<sup>39</sup>

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<sup>36</sup> FAO, 2014. Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines): <http://www.fao.org/3/a-i4356e.pdf>

<sup>37</sup>Puget Sound Partnership; August 9, 2012. Resolution 2012-04 Fish Consumption Rates

<sup>38</sup> Seattle Human Rights Commission. March 12, 2014. Resolution 14-01: Calling on Washington State Department of Ecology to Raise the Statewide Fish Consumption Rate

<sup>39</sup> Affiliated Tribes of Northwest Indians (ATNI). Resolutions 12-19, 12-54, 13-44, 14-56 related to FCR and cancer risk levels in water quality rules.

## II. HUMAN HEALTH CRITERIA (HHC)

### Introduction

Washington Department of Ecology issued a draft rule in 2015 with proposed Human Health Criteria, including a fish consumption rate of 175 g/day and a cancer risk level of one-per-100,000. NWIFC and member tribes commented extensively on the state's proposed HHC and implementation tools.<sup>40</sup> Many of NWIFC's previous comments to the state's 2015 proposal are still relevant, and are hereby incorporated into these comments on the Washington Department of Ecology 2016 proposed rule.

A major change since the state's 2015 proposed rule is that the state has retained the existing cancer risk level in applicable state law at one-per-million, a decision which is supported by NWIFC. In the year since the state issued the 2015 proposal, the EPA has adopted revised national criteria for water quality standards<sup>41</sup>, and has issued a draft rule to amend the NTR for water quality criteria applicable to Washington specifically.<sup>42</sup> Both EPA and the state have now proposed a fish consumption rate of 175 g/day and a cancer risk rate of 1 per million ( $10^{-6}$ ) in Washington. However, Washington State's 2016 proposal selectively adopts federal guidance from EPA's revised 2015 national criteria. The state proposal appears to adopt national recommendations for input values that result in less protection (i.e. body weight), but retains other factors at older values (relative source contribution and bio-concentration) that do not reflect best available science or updated national standards.

A comparison of the chemical criteria under the proposed federal and state rules for Washington indicates that the EPA version is more protective for approximately 80% of the regulated chemicals. Appendix B contains a spreadsheet comparing the proposed state rule, federal rule, and Oregon's water quality standards.<sup>43</sup> The tally, also in Appendix B, shows that the EPA rule is more protective of designated uses for a greater number of chemicals, and to a

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<sup>40</sup> Northwest Indian Fisheries Commission; March 23, 2015. Comments on the State's Draft Rule for Human Health Criteria and Implementation Tools in Water Quality Standards.

<sup>41</sup> U.S. Environmental Protection Agency, Final Updated Ambient Water Quality Criteria for the Protection of Human Health. FR Doc. 2015-15912 (June 29, 2015), EPA-HQ-OW-2014-0135-0155

<sup>42</sup> 80 Fed.Reg. 550066 (Sept. 14, 2015).

<sup>43</sup> Ridolfi Environmental, March 1, 2016. Spreadsheet of chemical comparisons: NTR, EPA 2015 WA, WA 2016 Proposed, OR Approved. See Appendix B for document. Also see Excel version in electronic attachments.



greater extent. Tribes remain concerned about the special treatment given to several challenging chemicals, including PCBs, arsenic, methylmercury, and 2,3,7,8-TCDD (dioxin) which would be vastly less protective in the state version of the rule. These differences have the potential for adding to the legacy of toxic chemicals in Washington waters, and increasing the risk to tribes and highly exposed populations.

## **A. Fish Consumption Rates**

### *Overview and Definitions*

The state of Washington currently utilizes a fish consumption rate of 6.5 g/day in their water quality standards – a rate established in 1992 by the US EPA in the National Toxics Rule. The existing rate is grossly under-representative of fish consumption in Washington, especially for tribal communities, thereby exposing tribal people to ongoing harm. The Washington Department of Ecology characterizes the selection of a FCR as a “risk management decision” at the discretion of the state.<sup>44</sup> Tribes do not willingly incur the risk to the health, cultural, and economic well-being of their citizens which results from the chemical contamination of freshwater and marine waters of Washington.

The proposed fish consumption rate of 175 g/day is lower than documented contemporary or heritage rates in regional tribal communities, and does not account for the suppression of fish consumption resulting from the availability of fish and shellfish, habitat degradation, biological and chemical contamination, or access to fishing grounds. The exercise of treaty-reserved fishing rights and the subsequent safe consumption of those resources must also be protected concomitantly with the designated uses of water in Washington State. The proposed rate of 175 g/day does not reflect the heritage rates that are relevant to the establishment of a FCR for Washington.

Tribes concur with the Washington Department of Ecology and the EPA that tribes must be considered as a highly exposed population and that tribal consumption rates be used as the basis for establishing a FCR in Washington. However, tribes disagree with the state’s contention that the proposed rate should be established based on “average” consumption values. The state has also mischaracterized 175 g/day as an “endorsed” value by tribes. Tribes have commented repeatedly that 175 g/day represents a minimum value that must be used in conjunction with other revised values used in the derivation of human health criteria that

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<sup>44</sup> WA Department of Ecology; January, 2016. Washington State Water Quality Standards: Human health criteria and implementation tools – Overview of key decisions in rule amendment. Ecology Publication no. 16-10-006.

would more accurately reflect likely exposure and toxicity. The state has failed to follow EPA’s 2015 recommendations for the calculation of relative source contribution and bioaccumulation, and has singled out several chemicals for special treatment—effectively exempting them from the application of human health criteria.

Tribes concur with the state’s decision to include all fish, including salmon, in the fish consumption rate since data demonstrate elevated levels of toxic contaminants in fish that originate, reside in, or transit, state freshwater and marine water bodies within Washington’s jurisdiction. Numerous studies by NOAA/National Marine Fisheries Service, Washington Department of Fish and Wildlife, Environment Canada, and the Puget Sound Ambient Monitoring Program have documented uptake of toxic chemicals in fish, shellfish, and marine mammal species in Puget Sound, the Columbia River, and other nearshore/marine areas of Washington. Tribes are highly reliant on local/regional fisheries resources for both personal consumption and commercial harvest.

**Definition of terms:**

As used herein, the following terms are applied:

**Heritage Rates** “refer to the rates of fish intake consonant with traditional tribal practices, prior to contact with European settlers”<sup>45</sup> and assume rates that were “uncontaminated and available” and not subject to suppression.<sup>46</sup>

**Contemporary** rates of tribal fish consumption, as used in this document, refers to fish consumption that has occurred in recent history, i.e. since the early 1990s when tribes began conducting dietary surveys to document modern consumption.

**Traditional** refers to harvest and consumption practices, similar to ancestral use of fisheries resources, and is not a rate.

**Subsistence** is used in two ways in this document: 1) as used by EPA and the Department of Ecology in reference to water quality criteria, and 2) as used in treaty tribal fisheries management. The intent must be inferred from context.

For further discussion of terms, please see the Appendix C on Fish Consumption Rates.

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<sup>45</sup> Donatuto, J., B. Harper and C. O’Neill; February 14, 2014. “Heritage, Subsistence, and Aspirational Fish Consumption Rates: Comments on Usage. Submitted to the Idaho Department of Environmental Quality.

<sup>46</sup> Catherine O’Neill, Professor of Law, Seattle University School of Law, Comments to IDEQ, *Risk, Human Health, and Water Quality Standards* (Jan. 20, 2015).

1. *The state has correctly identified tribes as a “highly exposed population” in the establishment of a fish consumption rate for Washington.*

Tribes concur with Ecology’s decision to base the FCR on “highly exposed populations” and that tribal fish consumption rates be used as the basis for a rate in the human health criteria used to set state water quality standards. Tribes note that Ecology must consider other highly exposed populations on the basis of environmental justice. As discussed previously, tribes must also be considered for the establishment of the HHC due to treaty-reserved fishing rights, a designated use under the Federal Clean Water Act.

2. *The proposed fish consumption rate of 175 g/day is lower than the rates of contemporary tribal fish consumption, unsuppressed fish consumption rates, or heritage rates.*

The proposed fish consumption rate of 175 grams per day in the Washington Department of Ecology’s proposed human health criteria is a step forward from the existing FCR of 6.5 g/day currently in effect in water quality standards applicable to Washington. However, 175 g/day is lower than contemporary consumption rates for tribal consumers, does not account for the suppression of fish consumption through habitat loss and lack of access to fisheries, and falls far short of heritage fish consumption values.

The following discussion is a summary of tribal fish consumption studies in the Pacific Northwest, the publication of technical documents related to fish consumption rates by the Washington Department of Ecology, and associated comments from the Washington Department of Health. Also see Appendix C for additional description of Pacific Northwest tribal fish consumption studies.

**a. Tribal Fish Consumption Studies**

Comprehensive tribal fish consumption studies have been regionally available to the public since 1994. A summary of tribal fish consumption rates is listed in the following table.

Table of fish consumption rate surveys from Tribal and selected FCR studies: <sup>47</sup>

<b>Tribal Survey and year published</b>	<b>Type of Fish</b>	<b>Mean</b>	<b>Median</b>	<b>75<sup>th</sup> percentile</b>	<b>90<sup>th</sup> percentile</b>	<b>95<sup>th</sup> percentile</b>	<b>99<sup>th</sup> percentile</b>
Columbia River Tribes 1994	Finfish (A, F)	63	40	60	113	176	389
Tulalip Tribe 1996	Finfish (A, E) Shellfish	72	45	85	186	244	312
Squaxin Island Tribe 1996 (upper value) and EPA 2013 reanalysis (lower value)	Finfish (A, E) Shellfish	73	43	-	193	247	-
		95			283	318	
Suquamish Tribe 2000	All seafood	214	132	284	489	797	
Lummi Nation 2013	Finfish (A, E) Shellfish	383	314	-	800	918	-
Nez Perce Tribe (Polissar, et al. 2015)		123.4	70.5	-	270.1	437.4	
Asian/Pacific Islanders 1999	Finfish (A, E) Shellfish	117	78	139	236	306	-

<sup>47</sup> Values in this table may differ slightly from Table 3 in the WAC 173-201A (2016) Decision document. Ecology uses fish consumption data from Polissar et al., 2012, a study commissioned by Ecology following the release of the first Technical Support Document on Fish Consumption Rates in 2011. The Polissar study analyzed fish consumption data for consumers only, and data are therefore slightly higher than the results expressed in the tribal studies for CRITFC, Tulalip, Squaxin Island, and Suquamish. Polissar et al. released a final version of the study in 2014, attached as an electronic file. Polissar et al. also prepared an analysis of the Nez Perce Tribe FCR in 2015. See Appendix C for details and references.

- b. In 2011-2012, the Washington Department of Ecology published a Technical Support Document that recommended a proposed range for a default FCR of 157 to 267 g/day. Tribes and others commented that this range is low.**

The Washington Department of Ecology Toxics Cleanup Program prepared a comprehensive review of fish consumption studies, which was initially issued in September, 2011 as a Technical Support Document.<sup>48</sup> Ecology had indicated to tribes and EPA in 2010 that they intended to complete an analysis of fish consumption rates in the context of setting Sediment Management Standards—information which would subsequently be transferrable to the development of Water Quality Standards. Ecology personnel from the Toxics Cleanup Program undertook the analysis of regional fish consumption data and published the Technical Support Document in September 2011, which included the following preliminary recommendation:

*“Ecology has concluded that available scientific studies support the use of a default fish consumption rate in the range of 157 to 267 grams per day (g/day). The preliminary recommendation of this report is that default fish consumption rates should be within this range for state regulatory purposes.”*

As described in Appendix C, numerous tribes submitted comments on the Ecology Technical Support Document indicating that the proposed range did not represent unsuppressed or heritage fish consumption rates. Some tribes also expressed concern that the upper bound of the recommended range was established at the 95<sup>th</sup> percentile (instead of a higher percentile). Tribal comments also indicated that a regulatory default fish consumption rate should be at least 175 g/day, that contemporary rates of 400 grams per day or more have been observed in multiple tribal studies, and that heritage rates of 1,000 g/day or more have been identified in studies of historical consumption.

As described in Appendix A covering the history of delay by the state, the Washington Department of Ecology withdrew the Technical Support Document in

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<sup>48</sup> Washington Department of Ecology, Toxics Cleanup Program. September 2011. Fish Consumption Rates Technical Support Document. Publication no. 11-09-050. (Version 1.)

July, 2012, and substituted a second version without the recommended range.<sup>49</sup> Investigative reports cited industry intervention into the process at the time. (See Appendix A for references.) No default fish consumption rate was adopted for state sediment management standards, and the state has distanced itself from the initial Technical Support Document without justification.

Tribes also note that the Washington Department of Health has stated multiple times that a proposed fish consumption rate of 175 g/day is low.

*I am concerned that the consumption rates cited as recommendations in the previous draft were removed from the current document. DOH believes that there are ample well conducted, scientifically defensible studies available as described in the TSD to establish a range of consumption rates. DOH has previously commented to Ecology that a fish consumption rate should, at a minimum, be on par with Oregon's adopted value of 175 grams per day. DOH also recommended that a range of rates be considered, with the low end of 175 grams per day, along with higher rates associated with many Puget Sound Tribes as well as ethnic populations as detailed in the document. DOH would also suggest that Ecology determine whether the fish consumption rate of 500 pounds per capita per year (which equates to 620 grams per day) as cited in the 1974 Boldt decision on treaty rights is a legally enforceable rate.<sup>50</sup>*

**c. A Fish Consumption Rate of 175 g/day represents a suppressed rate**

Researchers have written at length about the many factors that have led to suppressed fish consumption in tribal communities. O'Neill, for example lists suppression factors including: habitat degradation and loss of resource productivity and abundance; bacterial and chemical contamination of fishing grounds; bacterial and chemical contamination of fish; the perception among tribal members that fish may not be safe to eat; blocked access to fishing grounds from roads, dams, structures, fencing of private property, and harassment; and intercepting fisheries from commercial fishermen in Washington, Alaska, and Canada. Suppression among tribal consumers has resulted directly from potential exposure to toxic chemicals in

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<sup>49</sup> Washington Department of Ecology; January 2013. Fish Consumption Rates: Technical Support Document—A Review of Data and Information About Fish Consumption in Washington, Version 2.0, Final. Publication no. 12-09-058. Washington Department of Ecology Toxics Cleanup Program. Olympia, WA.

<sup>50</sup> McBride, D. Washington Department of Health comments to M. Hankins, Washington Department of Ecology via email, quoted in internal memo summary August 17, 2012.

closures and health notifications, or indirectly because their consumption rates have been under-estimated due to the lack of access or reduced availability of the resource.<sup>51</sup>

Ecology indicated in the 2011 Technical Support Document that the recommended range of 157-267 grams per day did not account for suppression of fisheries, and that researchers suggested a tribal fish consumption rate above 450 grams per day.

Recently, EPA recognized the significance of contamination in suppressing tribal fisheries. In their 2013 guidance on fish consumption rates EPA provided that:

*It is also important to avoid any suppression effect that may occur when a fish consumption rate for a given subpopulation reflects an artificially diminished level of consumption from an appropriate baseline level of consumption for that subpopulation because of a perception that fish are contaminated with pollutants.*<sup>52</sup>

Also, EPA provided similar guidance within the specific context of considering the development of HHC protective of Washington's designated uses:

*EPA also generally recommends, where sufficient data are available, selecting a FCR that reflects consumption that is not suppressed by fish availability or concerns about the safety of available fish. Deriving criteria using an unsuppressed FCR furthers the restoration goals of the CWA, and ensures protection of human health as pollutant levels decrease, fish habitats are restored, and fish availability increases. While EPA encourages doing so in general, where tribal treaty or other reserved fishing rights apply, selecting a FCR that reflects unsuppressed fish consumption could be necessary in order to satisfy such rights.*<sup>53</sup>

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<sup>51</sup> O'Neill, C. 2013. Fishable waters. American Law Journal 1:2 (Spring 2013)

<sup>52</sup> USEPA. January 2013. *Human Health Ambient Water Quality Criteria and Fish Consumption Rates: Frequently Asked Questions*.  
<http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf>.

<sup>53</sup> 80 Fed Reg 55063, 55065 (Sept. 14 2015)

EPA has also disapproved state water quality standards, in part based upon their failure to utilize FCR data that reflected unsuppressed rates. In attachment A of EPA's decision to deny proposed water quality standards for the state of Maine, EPA provided the following:

*"Second, the data used to determine the fish consumption rate for tribal sustenance consumers must reasonably represent tribal consumers taking fish from tribal waters and fishing practices unsuppressed by concerns about the safety of the fish available to them to consume."* <sup>54</sup>

**3. *The proposed fish consumption rate is not representative of a heritage rate or rates reflective of treaty-reserved fishing rights.***

The EPA has stated that the protection of treaty-reserved fishing rights must be considered when establishing criteria for the protection of designated uses under the Clean Water Act, and "that such the criteria protecting such uses must be consistent with such right [sic]." <sup>55</sup> As the aforementioned comments explain, heritage rates are relevant to the establishment of an FCR and derivation of HHC applicable to Washington. Part III A of the proposed federal rule states that:

*"In Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes, including treaty-reserved rights to fish at all usual and accustomed fishing grounds and stations in waters under state jurisdiction, which cover the majority of waters in the state. Such rights include not only a right to take those fish, but necessarily include an attendant right to not be exposed to unacceptable health risks by consuming those fish."*

*"Many areas where reserved rights are exercised cannot be directly protected or regulated by the tribal governments and, therefore, the responsibility falls to the state and federal governments to ensure their protection. In order to effectuate and harmonize these reserved rights, including treaty rights, with the CWA, EPA determined that such rights appropriately must be considered when determining which criteria are*

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<sup>54</sup> U.S. Department of the Interior, Office of the Solicitor. January 30, 2015. Letter from Hilary C. Tomkins to Avi Garbow, General Counsel, U.S. Environmental Protection Agency. RE: Maine's WQS and Tribal Fishing Rights of Maine Tribes

<sup>55</sup> 80 Fed. Reg. 55067



*necessary to adequately protect Washington's fish and shellfish harvesting designated use.*<sup>56</sup>

Tribes concur with EPA's logic that it is appropriate under the CWA to set water quality standards that are also consistent with the goal of protecting treaty rights.

Footnote 18 in the proposed federal rule indicates that "historical or heritage FCRs could be of relevance to establishing unsuppressed FCRs for Washington tribes." The proposed state rule for an FCR of 175 g/day does not constitute a heritage rate of fish consumption among treaty tribes. Fish Consumption Rates over 500g/day have been documented in estimates of heritage rates and in contemporary dietary studies.<sup>57, 58</sup> Examples include:

Suquamish Tribe <sup>59</sup>	797g/day, 95 <sup>th</sup> percentile, contemporary Maximum reported: 1,453 g/day (Suquamish Tribe, 2000) Note: In the Suquamish survey, high consumption rates were believed to reflect actual high consumption and were not treated as outliers. The statisticians found that the calculations of percentiles were virtually unaffected by the inclusion of the higher consumption rates.
Lummi Nation	918 g/day, 95 <sup>th</sup> percentile, males, estimated 1985 rate (Lummi Nation, 2012) Note: the Lummi Nation study did not utilize the methods from contemporary dietary studies of fish consumption. In an effort to estimate suppressed fish consumption from the loss of fishing opportunity, the Lummi Nation study estimated 1985 consumption through recall surveys and other data.

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<sup>56</sup> Id

<sup>57</sup> O'Neill, C.A. 2007. Protecting the Tribal Harvest: The Right to Catch and Consume Fish. J. Envtl. Law and Litigation. Vol. 22, 131

<sup>58</sup> National Environmental Justice Advisory Council, 1992. Fish Consumption and Environmental Justice: A report developed from the meeting of the National Environmental Justice Advisory Council meeting of December 3-6, 2001.

<sup>59</sup>Suquamish Tribe, 2000. Fish consumption survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation.

Umatilla (CTUIR)	540 g/day, mean Contemporary consumption traditional fishing families (Harris and Harper, 1997) <sup>60</sup>
“Boldt Rate”	620 g/day, mean, salmon consumption US v. Washington 1974
Spokane Tribe	865 g/day FCR Revised Surface Water Quality Standards of the Spokane Tribe of Indians, Submitted April 2010. Approved by EPA December 19, 2013 <sup>61</sup>
Columbia River	1,000 g/day, Pre-dam rate for Columbia River Plateau Tribes <sup>62 63</sup>
Columbia River	620-725 g/day average heritage rate for Columbia River mainstem. <sup>64</sup>

4. *The Department of Ecology fails to acknowledge the need to address more than an “average” of the highly exposed population.*

**a. Ecology appears to advocate a policy of adopting an average statistic in selecting a fish consumption rate for Washington.**

Ecology’s Decision Document states that they have made a risk management decision to base the FCR on highly exposed populations, and goes on to say “Ecology is continuing use of the average statistic [for the FCR].” (p 18) The FCR of 175 g/day

<sup>60</sup> Harris, S.G. and B.L. Harper. 1997. A Native American exposure scenario. *Risk Analysis* 17(6):789-795

<sup>61</sup> U.S. Environmental Protection Agency, Region 10. Letter to Spokane Tribal Chairman Rudy Peone, December 19, 2013 and attached Technical Support Document.

<sup>62</sup> Walker, D.E. 1992. Productivity of tribal dipnet fishermen at Celilo Falls: Analysis of the Joe Pinkham fish buying records. *Northwest Anthropological Research Notes* 26:123-135.

<sup>63</sup> Walker, D.E. and L.W. Pritchard. 1999. Estimated radiation doses to Yakama Tribal fishermen. Walker Research Group, Boulder, CO

<sup>64</sup> Harper, B.L. and Walker, D.E. 2015. “Columbia Basin Heritage Fish Consumption Rates.” *Human Ecology* (2015) 43: 237-245.

is less than the mean for the Suquamish Tribe, less than the 90<sup>th</sup> percentile of any of the Puget Sound Tribes cited by Ecology, and less than the 95<sup>th</sup> percentile in the 1994 Columbia River tribal study. Ecology has selected a value that Ecology contends is representative of an average rate. Tribes continue to assert that an appropriate fish consumption rate should encompass an upper percentile of the highly exposed population.

**b. Tribes agree with EPA’s approach to the selection of a FCR that reflects an upper percentile of fish consumption data for tribes, and disagree with Ecology’s assertion that an “average” value is appropriate.**

The proposed federal rule<sup>65</sup> cites EPA’s 2000 recommendation to use an upper percentile of fish consumption data for the target general population, and notes that EPA’s current national FCR of 22 g/day represents the 90<sup>th</sup> percentile national FCR. Public health standards are not typically set on an average or median value when considering risk to a population.<sup>66</sup> Regulatory standards must be based on the goal of protecting the highest possible portion of the population, not just the average (mean) or only half of the population (median). EPA identifies “the tribal population exercising their reserved fishing rights in Washington as the target general population,” and indicates that the selected value of 175 g/day for Washington represents the 95<sup>th</sup> percentile consumption rate from the CRITFC study.<sup>67</sup>

Ecology similarly identifies tribes as a “highly exposed population,” but states that that 175 g/day is “representative of the average value/values of these surveys” (referring to Tulalip, Squaxin Island, and Suquamish).<sup>68</sup> Although both EPA and Ecology selected 175 g/day, Ecology’s assertion that it is appropriate to use an average value (as opposed to an upper percentile) is wrong.

Additionally, Ecology’s assertion that 175 g/day is representative of an average value of fish consumption reinforces the tribes’ contention that 175 g/day is low. Using

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<sup>65</sup> 80 F.R. 550066 (Sept. 14, 2015).

<sup>66</sup> See comments in (c) below for examples of regulatory standards utilizing upper percentiles as opposed mean or median values.

<sup>67</sup> 80 F.R. 550066 (Sept. 14, 2015).

<sup>68</sup> WA Department of Ecology; January, 2016. Washington State Water Quality Standards: Human health criteria and implementation tools – Overview of key decisions in rule amendment. Ecology Publication no. 16-10-006.

Ecology's table on page 19 of the Key Decisions document, Tribes note that the average of the 90<sup>th</sup> percentile values for the same three tribal studies (Tulalip, Squaxin Island, and Suquamish) is 296 g/day, and for the 95<sup>th</sup> percentile the FCR would be 448 g/day.<sup>69</sup>

**c. Regulatory standards commonly utilize upper percentiles of data when estimating exposure, and setting subsequent standards or thresholds for toxicity. Some examples include:**

- In the development of standards for toxic cleanup in Washington, the Department of Ecology indicated that the selection of a value for Reasonable Maximum Exposure under the Model Toxics Cleanup Act is typically set at 90 to 95 percent of the exposure distribution. (Ecology Technical Support Document 2011)
- During preparation of the revised Oregon water quality standards, the Oregon Department of Environmental Quality indicated that fish consumption rates in the 90<sup>th</sup> to 95<sup>th</sup> percentile are considered appropriate. Oregon tribes advocated for a value approximating the 99<sup>th</sup> percentile. After extensive discussion with regional tribes, Oregon adopted a compromised rate at the 95<sup>th</sup> percentile of the fish consumption values identified in the Columbia River Inter-tribal Fish Commission study (1994).
- The EPA Exposure Factors Handbook recommends a level of reasonable maximum exposure for a population at risk at the 90<sup>th</sup> to 98<sup>th</sup> percentile.<sup>70</sup>

These examples illustrate that it is not common in establishing public health standards to use values that reflect median or average levels of exposure to toxic chemicals that may result in death and impairment of human health. The use of percentile values that protect over 90 percent of the population at risk are recommended.

5. *The proposed fish consumption rate of 175 g/day is a minimum value that has not been endorsed by tribes as a stand-alone value. Several tribes have repeatedly stated that a fish consumption rate of at least 175 g/day is part of a package with other protective values used to derive human health criteria.*

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<sup>69</sup> Ibid.

<sup>70</sup> US Environmental Protection Agency, 2011. Exposure Factors Handbook: 2011 Edition. National Center for Environmental Assessment. Washington D.C. EPA/600/R-09/052F. Glossary P G-8

Ecology publication no. 16-10-006, the Overview of Key Decisions in Rule Amendment, states that the FCR of 175 g/day has been endorsed by several tribes. Tribes reiterate that a fish consumption rate of at least 175 g/day represents an improvement from the existing criterion of 6.5 g/day, but it cannot be viewed as an endorsement in isolation from other HHC. Tribes also reiterate that the value of 175 g/day is low, based on technically defensible data.

Ecology has improved the proposed rule from the 2015 version by retaining the cancer risk rate at one-per-million, but Ecology declines to adopt other EPA recommended values used in the derivation of national recommended human health criteria. No formal compromise, endorsement, or negotiated value presently exists between tribes and the state as a stand-alone value independent from other HHC.

**6. *Tribes support Ecology's decision to include all fish in the fish consumption rate.***

Heritage and contemporary studies of Pacific Northwest tribes show that tribal communities eat a variety of freshwater, marine, and estuarine fish and shellfish year-round. Tribes harvest fish and shellfish that originate, rear, migrate, or reproduce in Washington's freshwater, estuarine and marine waters. Tribal treaty harvest is geographically defined by usual and accustomed fishing areas; tribes thus do not have the legal flexibility to relocate harvest patterns and practices if fisheries resources in a given area become contaminated.

**a. Tribes support the Department of Ecology's decision to include all species of salmon.**

Salmon are a "first food" for tribal people and a nutritional, cultural, and economic mainstay for tribal communities as well as a treaty-reserved resource for many tribes. Fish health advisories throughout Washington include harvest closures and consumption limits on salmon due to toxic chemicals.<sup>71, 72</sup>

The 2006 evaluation of toxic chemicals in Puget Sound by WADOH indicated that,

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<sup>71</sup> Washington Department of Health; March 22, 2015. Fish Consumption Advisories. Accessed from <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories>

<sup>72</sup> Washington Department of Health; October, 2006. Puget Sound Fish Consumption Advice. Accessed from <http://www.doh.wa.gov/Portals/1/Documents/Pubs/334-098.pdf> on March 22, 2015.

*“High end, Native American consumers of in-river and marine Chinook salmon exceed a PCB HQ [Health Quotient] of 1. This includes estimates based on consumption rates of the Suquamish, Tulalip, and Squaxin Island Tribes. High-end API consumers and average recreational consumers also exceed a PCB HQ of 1. PCB hazard quotients from consumption of Puget Sound coho salmon are less than one for all consumers except high-end Suquamish consumers of coho from “marine” stocks..... Although average PCB levels in Puget Sound coho are below levels of concern, some individual station averages may be slightly above levels of concern, as evidenced by station-specific hazard quotients.”<sup>73</sup>*

Clearly tribal consumers have already been eating salmon from multiple species at levels above recommended exposure for several years, and chemical criteria must account for salmon in human health criteria.

**b. Numerous studies document chemical update of persistent pollutants in fish. In particular, salmonids have been shown to accumulate toxic chemicals in freshwater, estuarine, and coastal marine areas of Washington.**

**i. Technical Support Document and Supplement**

Versions 1 and 2 of Ecology’s Technical Support Document on Fish Consumption Rates included references related to chemical contaminants in fish (see for example, Appendix H in Version 1). In response to public comments on the TSD Version 1, the WA Department of Ecology prepared a supplement document<sup>74</sup> to evaluate the inclusion of fish and shellfish in the default FCR, particularly salmon, and associated health benefits and risks of fish consumption. The supplemental information includes sections that are directly relevant to the discussion of the draft rule for Human Health Criteria as follows:

- Health Benefits and Risks of Consuming Fish and Shellfish
- Chemical Contaminants in Dietary Protein Sources
- Salmon Life History and Contaminant Body Burdens

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<sup>73</sup> Washington Department of Health, Division of Environmental Health; October, 2006. Human Health Evaluation of Contaminants in Puget Sound Fish. DOH-334-104. Olympia, WA.

<sup>74</sup> Washington Department of Ecology, Toxics Cleanup Program; July 20, 2012. Supplemental Information to Support the Fish Consumption Rates Technical Support Document. Olympia, WA.

The supplement also cites numerous studies (hereby incorporated by reference) that document the uptake of toxic chemicals among salmon at various life stages in Washington freshwater, estuarine, and marine waters. In particular, studies by the WA Department of Fish and Wildlife document higher levels of persistent organic pollutants in Puget Sound resident Chinook compared to Chinook in other areas of the Pacific Northwest, indicating higher exposure in the inland waters of Puget Sound.<sup>75</sup> Ecology's overview description in the supplement (Section C, "Salmonid Body Burdens") has been confirmed as correct by the researcher from Washington Department of Fish and Wildlife.<sup>76</sup> Some commenters on the Technical Support Document (1.0) had stated that salmon pick up the body burden of toxic chemicals in marine waters, implying that they should be excluded from the fish consumption rate, without accounting for the fact that marine waters include estuarine and nearshore areas such as Puget Sound. A synopsis of the issue addressing the importance of including salmon in the Fish Consumption Rate is included in the blog article by C.A. O'Neill, 2012.<sup>77</sup>

ii. Additional references

Documents and presentations prepared by NOAA/National Marine Fisheries Service, the WA Department of Ecology, WA Department of Health, WA Department of Fish and Wildlife, Environment Canada, and the Puget Sound Ambient Monitoring Program describe chemical contamination in a wide range of fish, shellfish, and marine mammal species in Washington freshwater, estuarine, nearshore and coastal waters including Puget Sound and the Columbia River basin (examples listed, more attached but not cited individually).<sup>78, 79, 80</sup>

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<sup>75</sup> O'Neill, S.M. and J. E. West, 2009. Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenols in Chinook Salmon from Puget Sound, WA. Transactions of the American Fisheries Society 138:616-632,2009. DOI: 10.1577/TO8-003.1

<sup>76</sup> West, James; March 9, 2015. Email re: Puget Sound toxic chemical uptake in salmon.

<sup>77</sup> O'Neill, C.A. (Puget) Sound Science. November 8, 2012. Center for Progressive Reform blog. <http://progressivereform.org/CPRBlog.cfm?idBlog=E072AEC3-A728-A0BD-32965A41D8C66EBB>

<sup>78</sup> West, James E. 2011. PCBs in Puget Sound's Food Web. Presentation to the Washington Department of Ecology Technical Fish Consumption Workshop on December 12, 2011 at the University of Washington, Seattle, WA. Accessed at: [http://www.ecy.wa.gov/toxics/docs/20111212\\_fishworkshop\\_west.pdf](http://www.ecy.wa.gov/toxics/docs/20111212_fishworkshop_west.pdf)  
[http://www.ecy.wa.gov/toxics/fish\\_publicinvolvement.html](http://www.ecy.wa.gov/toxics/fish_publicinvolvement.html)

<sup>79</sup> O'Neill, S.M., G.M. Ylitalo, J.E. West, J. Bolton, C.A. Sloan and M.M. Krahn. April, 2006. Regional patterns of persistent organic pollutants in five Pacific salmon species (*Onchorhynchus spp*) and their contribution to contamination levels in northern and southern resident killer whales (*Orcinus orca*). Extended abstract presented to the 2006 Southern Resident Killer Whale Symposium. Seattle, WA.

Some of these references are included in the Ecology supplement and others have been identified or are more recent. West's March 9, 2015 email also states that,

*"Sandie reported at the 2014 Salish Sea Ecosystem Conference on a recent PSEMP study where we measured PBT burdens in juvenile Chinook salmon during their first year of life in Puget Sound in 2013. Results from this effort documented high exposures of outmigrating Chinook to PBTs in contaminated river mouths and nearshore habitats, and in Puget Sound marine waters."*<sup>81</sup>

Additional studies of pollutants in juvenile Chinook salmon in the Columbia River basin have also been published since the completion of the Technical Support Document supplement.<sup>82</sup>

**c. Water quality monitoring continues to yield additional information about the uptake of pollutants in Washington waters by salmonids and other fish species.**

Monitoring is an essential tool in the implementation of the Clean Water Act to identify impaired waters, assess improvement or degradation, and identify differences in specific areas of Washington. In order to protect tribal communities and other high fish consumers from greater risk of exposure, additional monitoring, including fish tissue sampling and updated detection methodology, should continue.. For example, Washington Departments of Fish and Wildlife and Ecology initiated an interagency agreement for fish tissue sampling of outmigrating juvenile Chinook salmon (initial findings cited above). These efforts will continue to yield data demonstrating the uptake of HHC pollutants by salmonids, and therefore provide further evidence that all fish are necessarily included in FCR. The importance of monitoring activities is summarized in the statement in the introduction of the interagency agreement:

*"Results from this work will be used to provide a measure of the effectiveness of current toxic reduction strategies and actions, inform*

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<sup>80</sup> Presentations at the 2014 Toxics Reduction Conference; Seattle, WA. November 17, 2014.

<sup>81</sup> West, James; March 9, 2015. Email re: Puget Sound toxic chemical uptake in salmon.

<sup>82</sup> Johnson, L., B. Anulacion, M. Arkoosh, O.P. Olson, C. Sloan, S.Y. Sol, J. Spromberg, D.J. Teel, G. Yanagida and G. Ylitalo. 2013. Persistent organic pollutants in juvenile Chinook salmon in the Columbia River basin: Implications for stock recovery, transactions of the American Fisheries Society, 142:1, 21-40.



*future pollution reduction efforts, and enhance recovery of Chinook Salmon.*"<sup>83</sup>

In addition to this data, which supports inclusion of all fish in an FCR, Tribes also add that monitoring is also an essential component of the implementation of water quality standards to measure both performance and effectiveness.

**d. Western Washington tribal studies indicate high levels of shellfish consumption.**

The FCR studies for Tulalip, Squaxin Island, and the Suquamish Tribes have fish consumption rates of 244, 318, and 797 grams per day, respectively, at the 95<sup>th</sup> percentile. The Columbia River study, completed earlier, indicated a FCR of 175 g/day at the 95<sup>th</sup> percentile, comprised primarily of finfish species.

Tribal treaty rights include the right to harvest and consume shellfish, much the same as finfish in their usual and accustomed grounds. The Ninth Circuit Court of Appeals held that "usual and accustomed grounds and stations" are the same for shellfish as they are for fish, noting that establishing grounds for each species of fish would be unduly burdensome.<sup>84</sup>

The importance of shellfish in determining a fish consumption rate has been recognized by the Washington Department of Health. During the review of Ecology's Technical Support Document in 2011-2012, the Washington Department of Health stated that:

*"Washington State Department of Health's Position is that 175 grams / day is the **minimum** in Washington State's fish consuming populations because the 175 grams / day estimate in the Columbia River Inter-tribal Fish Commission Survey does not fully account for the range of shellfish harvested and consumed by Washington State's fish consuming populations. (McBride, December 2012) [emphasis in original]"*<sup>85</sup>

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<sup>83</sup> O'Neill, S., J.E. West, L.L. Johnson, J. Lanksbury, L. Niewolny and A. Carey. July, 2013. Quality Assurance Project Plan: Toxic contamination in outmigrating juvenile Chinook Salmon (*Oncorhynchus tshawytscha*) from river mouths and nearshore saltwater habitats of Puget Sound. WDFW-Ecology Interagency Agreement #G1200486.

<sup>84</sup> *Shellfish III*, 157 F.3d 630, 645 (9th Cir. 1998), *cert. denied*, 119 S. Ct. 1376 (1999).

<sup>85</sup> McBride, D.. December 20, 2012. Memo to C. McCormack re: Fish Consumption.

In areas where toxic cleanup sites and contaminated sediments are present, such as Port Gamble Bay, regional health entities have issued specific guidelines for subsistence shellfish harvesters.<sup>86</sup>

Finfish and shellfish are an important cultural, economic and subsistence food, which the tribes consume regularly. A failure to include all species of fish and shellfish in the calculation of human health criteria, could result in under estimating tribes' exposure to any given toxic parameter, and therefore fail to adequately protect the target population

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<sup>86</sup> Washington Department of Health, 2014. DOH 334-361. Is Port Gamble Bay shellfish in your diet? Information for subsistence harvesters.

## B. Cancer Risk Level

In order to protect public health for the citizens of Washington and designated uses that depend on water quality, it is essential that the state of Washington maintain the cancer risk level used in the calculation of water quality criteria at a level of one-per-million ( $10^{-6}$ ), retain the current water quality standard, WAC 173-201a-240(6), and resist political pressure to raise the cancer risk level as an offset for higher fish consumption rates.

Tribes concur with the state's decision to reverse the proposed change to a risk level of one per 100,000 ( $10^{-5}$ ) that was advanced in the 2015 version of the state's rule.

- A reduction in the protective level of cancer risk fails to protect designated uses under the Federal Clean Water Act, which is the sole basis for authorization of standards.
- Maintaining a cancer risk level of  $10^{-6}$  corresponds to longstanding state policy, reflected initially in the Department of Ecology's comments on the 1992 NTR, and maintained in the standards at WAC 173-201A-240(6).
- Manipulating the cancer risk level has a profound and direct effect on the protective level of standards, to the detriment of highly exposed populations.
- Increasing the cancer risk level would decrease protection of tribal treaty-reserved rights to safely harvest and consume fish in the Pacific Northwest.
- An increase in the cancer risk level used to calculate human health criteria would have a disproportionate impact to tribes and other highly exposed populations, in violation of environmental justice mandates.

Ecology states that the proposed rule applies the existing risk level of  $10^{-6}$  to a FCR of 175 g/day that is representative of the arithmetic means (averages) of highly exposed populations.<sup>87</sup> If the state of Washington adopts standards in the future that reduce the cancer risk level to  $10^{-5}$ , such action should not be approved by EPA without consideration of the need to use a higher percentile for the FCR and the need for public notice and comment. For additional discussion

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<sup>87</sup> Ecology, 2016. Decisions document, p 23.

on the state's previous proposal to use a cancer risk level of  $10^{-5}$ , please refer to the NWIFC comments on the state's 2015 proposed rule.<sup>88</sup>

**1. Tribes concur with Ecology's decision to retain the cancer risk level of one-per-million ( $10^{-6}$ ) currently in effect in the NTR criteria and adopted in Washington State Water Quality Standards.**

It is current Washington State law that, "Risk-based criteria for carcinogenic substances shall be selected such that the upper-bound excess cancer risk is less than or equal to one in one million."<sup>89</sup> Tribes and environmental and human health organizations have clearly requested, and advocated for, maintaining a cancer risk rate of  $10^{-6}$  in Washington as necessary for the protection of human health and the designated uses of water in the Clean Water Act. In numerous correspondences, Tribes,<sup>90</sup> EPA,<sup>91</sup> environmental and human health organizations<sup>92</sup>, and the Department of Ecology<sup>93</sup> have advocated that  $10^{-6}$  is an appropriate cancer risk level for use in developing Human Health Criteria (HHC) to ensure protection of designated uses.

During the state rule-making process in 2012-2015, industry advocates argued for a ten-fold increase in the cancer risk level, based on their assertion that the EPA's year 2000 methodology for deriving ambient water quality criteria (AWQC guidance)

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<sup>88</sup> Northwest Indian Fisheries Commission; March 23, 2015. Comments on the State's Draft Rule for Human Health Criteria and Implementation Tools in Water Quality Standards.

<sup>89</sup> WAC 173-201A-240(6)

<sup>90</sup> See section I.C and section I generally in this document correspondence to DOE imploring the state to maintain the current cancer risk rate.

<sup>91</sup> See Letter from Dennis McLerran, EPA Region 10 Regional Administrator to Senator Doug Eriksen. April 24, 2014. See Also Letter from Dennis McLerran, EPA Region 10 Regional Administrator to Senator Doug Eriksen. July 1, 2014

<sup>92</sup> See E.g. [www.keepourseafoodclean.org](http://www.keepourseafoodclean.org); see also Letter from Nina Bell executive Director of NWEA to EPA Administrator McCarthy, re: Petition for Rulemaking on Water Quality Criteria for Toxics in the State of Washington, October 28, 2013; and Attached Petition for Rulemaking From NWEA to EPA submitted by Nina Bell, Executive Director, Northwest Environmental Advocates 28th of October, 2013.

<sup>93</sup> See 57 FR 60848

allows states to set an increased cancer risk level.<sup>94</sup> Under the industry interpretation, the EPA's 2000 guidance would allow for an increase of the cancer risk level as long as the risk levels are set no higher than  $10^{-4}$  for so-called sensitive subpopulations. However, nothing in EPA guidance explicates that Washington tribes are in fact "subpopulations," or suggests that states have the discretion to minimize water quality standard protections for tribes. What the AWQC does is to require the justification of setting of a cancer risk level, by in part, ensuring the protection of the highly exposed. The Washington State Department of Ecology provided no justification during rule-making in 2015 for changing the cancer risk level, other than to consider it a state-specific "risk management" decision.<sup>95</sup>

## **2. A cancer risk level of one-per-million is necessary to address the risk of additive toxicity from multiple chemical contaminants.**

As EPA's rule proposal in the Federal Register notes, previous comments from the Washington Department of Ecology in 1991, clearly support  $10^{-6}$  due in part to concerns over additive toxicity—concerns which are shared by many tribes. When multiple chemicals induce the same effect by similar modes of action, EPA guidance is to assume that the chemicals contribute additively to risk.<sup>96</sup> Evaluating cumulative risks from exposures to multiple chemicals "is especially important in cases where the resulting toxic effect from the mixture has been demonstrated to be greater than the sum of the individual effects".<sup>97</sup> EPA has stated previously that "[c]ertain categories of contaminants, in particular, persistent organic pollutants that share a common mode of action and/or target tissue, are of elevated concern when they co-occur in the fish and drinking water."<sup>98</sup> Tribes also note that anadromous fish, such as salmon, may transit multiple inland, nearshore, and marine waters through their migratory life cycle, potentially exposing them to numerous chemical contaminants.

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<sup>94</sup> Association of Washington Business, January 18, 2013. "[Water Quality Risk Policy for the Protection of Human Health](http://www.ecy.wa.gov/programs/wq/swqs/whatpeoplesay.html)". Posted on Washington Department of Ecology: Feedback on Current Rulemaking. <http://www.ecy.wa.gov/programs/wq/swqs/whatpeoplesay.html>

<sup>95</sup> WA Dept. of Ecology; January 2015. "Overview of Key Decisions in Rule Amendment" Ecology Publication no. 14-10-058.

<sup>96</sup> U.S. Environmental Protection Agency (EPA). 2000c *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, Technical Support Document Volume I: Risk Assessment*. Office of Water, Office of Science and Technology. EPA-822-B-00-005. October.

<sup>97</sup> *Id*

<sup>98</sup> *Id*

In order to protect humans from exposure to carcinogens, a risk level of  $10^{-6}$  is appropriate for calculating individual chemical criteria, and to address the likely additive and synergistic effects of toxic pollutants.

**3. A risk that is not zero is still a risk.**

Although tribes have advocated for Washington to retain their existing cancer risk level of  $10^{-6}$  for the criteria applicable to Washington in the context of CWA regulation, tribes have not universally supported one-per-million as representative of an adequate *de minimus* risk to protect treaty-reserved rights in all cases. Some tribes have stated that any elevated health risk to tribal members from fish consumption is unacceptable—in other words recommending that the pollutant concentrations be set to zero to protect human health. There is no recognized safe concentration for a human carcinogen.

## C. Relative Source Contribution (RSC)

### 1. *Ecology Must Utilize Default Relative Source Contribution Values as Recommended By EPA in Order to Accurately Account for Toxic Exposures and Set Criteria that Protect the Designated Uses*

When deriving human health water quality criteria for non-carcinogens, a relative source contribution (RSC) factor is included to account for non-water sources of exposure to pollutants. The RSC designates a percentage of an individual's acceptable daily intake (or "reference dose") that accounts for exposures from water and fish when there are other possible exposure routes, including non-fish food consumption, dermal exposure, and respiratory exposure. The use of RSC ensures that an individual's total exposure from all sources of a pollutant does not exceed a maximum acceptable daily intake.<sup>99</sup>

EPA's *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (2000), provides guidance for determining the appropriate RSC to be used for a particular chemical. **In the absence of data, the EPA recommends the use of 20 percent as the default RSC in calculating criteria for State or Tribal water quality standards.**

In 2013, EPA published "*Human Health Ambient Water Quality Criteria and Fish Consumption Rates Frequently Asked Questions*" to clarify agency policy and the guidance included in its 2000 Human Health Methodology. Discussing the RSC factor, EPA states:

*In the absence of scientific data, the application of the EPA's default value of 20 percent RSC in calculating 304(a) criteria or establishing State or Tribal water quality standards under Section 303(c) will ensure that the designated use for a water body is protected. This 20 percent default for RSC can only be replaced where sufficient data are available to develop a scientifically defensible alternative value. If appropriate scientific data demonstrating that other sources and routes of exposure besides water and freshwater/estuarine fish are not anticipated for the pollutant in question, then the RSC may be raised to the appropriate level, based on the data, but not to exceed 80 percent. The 80 percent ceiling accounts for the fact that some sources of exposure may be unknown.*

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<sup>99</sup> EPA. 2000.supra; EPA. 2014. supra

EPA adopted final updated national water quality criteria for the protection of human health on June 29, 2015. EPA's regulations provide that states and authorized tribes should adopt numeric water quality criteria based on:

- (1) EPA's recommended section 304(a) criteria; or
- (2) EPA's recommended section 304(a) criteria modified to reflect site-specific conditions; or
- (3) Other scientifically defensible methods. (40 CFR 131.11(b)).

EPA's proposed water quality standards applicable to Washington, followed the path in (2) primarily using the values in the recommended 304(a) criteria, but included a modified FCR to reflect Washington's specific consumption patterns. Conversely, the Department of Ecology's proposal for RSC deviates from national guidance (304(a)), but provides neither defensible nor site-specific information to justify their deviation from updated 304(a) criteria as required by federal regulations. Instead, Ecology is proposing that the draft rule uses a relative source contribution value of one, or 100 percent, not because this is the site-specific exposure scenario for Washington, but because Ecology "believes" this is a prudent policy decision.

The rationale for this decision is included in Ecology's *"Overview of key decisions in rule amendment."* (2016) Specifically, the decision for the draft rule states that:

*Because the geographic and regulatory scope of the CWA addresses contaminant discharge directly to waters of the state (not other sources or areas), Ecology is making a risk management decision that this draft rule continue to use a relative source contribution of one (RSC = 1). Given the limited ability of the Clean Water Act to control sources outside its jurisdiction, Ecology strongly believes that this is a prudent decision.*

It is important to note, however, nothing in the EPA's guidance suggests that the RSC should be modified based upon the level of control a state has over a particular pollutant. By proposing to use a RSC of 100 percent, it appears that Ecology has misconstrued the existing EPA guidance. The guidance does not suggest, as Ecology proposes, that the Clean Water Act is intended to **control** sources outside its jurisdiction, only that it **accounts** for them when assessing "safe" levels of exposure. Ecology has taken the position that because regulation of other exposures is beyond the scope of the Clean Water Act jurisdiction, it is therefore prudent to allot **all** of an individual's acceptable daily intake to drinking water and fish consumption (or, in the case of marine criteria, only to fish consumption) when establishing safe levels of exposure. However, if an individual's entire daily intake comes from surface water exposures, then any additional exposure would exceed the acceptable daily intake, and would increase the likelihood of a variety of non-cancer health effects. In other words, Ecology cannot ignore that humans are exposed to other pathways of contaminants and have preexisting body burdens when attempting to establish thresholds of safe exposure. To do so, would wrongly assume



much higher levels of safe levels of exposure through fish and water intake, and subsequently set pollutant allowances too high.

Regardless of what the CWA does and does not have jurisdiction over, Ecology must set water quality standards that will result in protection of the designated uses. This means Ecology must accurately assess the likely affects of exposure from water and fish intake, and assume that affects from pollutant burdened fish and water are not interacting with unadulterated or pristine human health conditions, especially considering criteria are based on a lifetime exposure of 70 years. EPA guidance states that “[w]hen other sources or routes of exposure are anticipated, but data are not adequate, there is an even greater need to make sure that public health protection is achieved”.<sup>100</sup> Not only has the State not provided data regarding other sources or routes of exposure for non-carcinogens, but there is ample evidence that a variety of non-water sources of exposure exist for most chemicals.

In the *PAH Chemical Action Plan*,<sup>101</sup> Ecology notes the following regarding sources of PAH exposures:

- Everyone is exposed to PAHs, which are present in food and found throughout the environment in air, water, soil, and dust. The importance of various sources of exposure to PAHs is expected to differ from person to person due to factors such as diet, the use of wood stoves in the neighborhood, occupation, and personal habits like smoking.
- Food accounts for 80 to 95% of PAH exposure for people who do not smoke and who do not have significant exposure on the job. For the average consumer, the three food groups that contribute most to dietary exposure appear to be cereals, vegetables/nuts, and meat. For people who regularly eat shellfish, PAH exposure from seafood may contribute 25% or more of dietary exposure.
- For smokers, PAH exposure from tobacco smoke can equal or exceed that from food. People who live or work with smokers can have greater than normal exposure to PAHs.
- Inhalation of PAHs in air is estimated account for about 10% of exposure.

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<sup>100</sup> EPA. 2000. *Supra*

<sup>101</sup> Washington Department of Ecology (Ecology). 2012. *PAH Chemical Action Plan*. Publication no. 12-07-048. December. Available at <https://fortress.wa.gov/ecy/publications/publications/1207048.pdf>

- Two major contributors of airborne PAHs in the Puget Sound region of Washington are exhaust from combustion engines and wood smoke from home heating.
- PAHs in water and soil are estimated to make only a minor contribution to most people's exposure.

Several of the PAHs are non-carcinogens, including fluoranthene, which is included on Ecology's list of Persistent Bioaccumulative Toxins (PBTs) that it considers the "worst of the worst."

Some other examples of non-water exposures to non-carcinogens include:

#### *Toluene*

Because toluene is a common solvent and is found in many consumer products, you can be exposed to toluene at home and outdoors while using gasoline, nail polish, cosmetics, rubber cement, paints, paintbrush cleaners, stain removers, fabric dyes, inks, adhesives, carburetor cleaners, and lacquer thinners. Smokers are exposed to small amounts of toluene in cigarette smoke.<sup>102</sup>

#### *Ethylbenzene*

The highest exposure to ethylbenzene for the general public is most likely to occur via inhalation associated with the use of self-service gasoline pumps or while driving a gasoline-powered motor vehicles especially in high traffic areas or in tunnels.<sup>103</sup>

#### *Endrin*

Because endrin is no longer used in the United States, residues on imported foods are the main source of potential human exposure in food.<sup>104</sup>

By electing to use a RSC value of 100 percent for all non-carcinogens, the criteria proposed by Washington are not consistent with EPA policy and guidance, do not account for non-water sources of exposure, and are therefore not adequately protective of the designated uses.

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<sup>102</sup> Agency for Toxic Substances and Disease Registry (ATSDR). 2000. *Toxicological Profile for Toluene*. U.S. Department of Health and Human Services, Public Health Service. August.

<sup>103</sup> Agency for Toxic Substances and Disease Registry (ATSDR). 2010. *Toxicological Profile for Ethylbenzene*. U.S. Department of Health and Human Services, Public Health Service. November.

<sup>104</sup> Agency for Toxic Substances and Disease Registry (ATSDR). 1996. *Toxicological Profile for Endrin*. U.S. Department of Health and Human Services, Public Health Service. August.

2. ***The RSC is part of Ecology's selective adoption of specific updates to national water quality criteria that tend toward a direction of higher (less protective) chemical criteria.***

Ecology proposes to use values from the updated national recommended human health criteria for body weight, which would change standards toward higher (less protective) chemical criteria. Ecology does not propose to adopt the new values used to calculate national criteria or follow guidance for RSC or Bioaccumulation Factors, which would tend toward lower (more protective) chemical criteria. Ecology would adopt updated national criteria for Reference Dose and Cancer Slope Factor, which have varying direction (higher or lower criteria) on a chemical by chemical basis. However, Ecology exempts some toxicity factors entirely (see discussion on 2,3,7,8-TCDD and arsenic).

These selective choices for water quality criteria, justified largely as risk management decisions at the discretion of the state, appear to be an attempt to offset the increase in the fish consumption rate to reduce the impact to dischargers. The change in the FCR from 6.5 to 175 g/day drives chemical criteria lower (makes them more protective), but as discussed previously, represents actual regional data for highly exposed populations. In combination with the use of Bioconcentration Factors, the use of an RSC of one (100%) results in chemical criteria that are less protective than the EPA proposed rule for approximately 80% of the regulated chemicals.

Ecology is required to adopt the values used to derive national recommended 304 (a) criteria, except where regional data specifically justify the selection of alternative criteria. In this case, Ecology has no such supporting data to suggest that default RSC values are unsupported or that Washington residents are solely exposed to the pollutants parameters via fish intake (at 175 gpd) and drinking water intake. In the face of uncertainty for toxic contaminants, Ecology should make risk management decisions in favor of public health, not dischargers.

3. **An RSC value of less than one is necessary to account for additional fish consumed by tribes, but not accounted for in the FCR.**

Despite Ecology's arguments that RSC should only be employed to account for additional fish and water intake exposures (within CWA jurisdiction) as opposed to other exposures such as recreational contact and inhalation, they fail to utilize a RSC value that would address documented fish intake that is not otherwise accounted for in the fish consumption rate. As mentioned early, numerous tribal fish consumption studies document contemporary consumption rates well in excess of 175 gpd. If Ecology does not plan to increase the FCR to account for these additional exposures, they then must apply a RSC value less than 1 to account for additional exposures of tribes from "other

fish.” This approach is consistent with EPA guidance on the matter. The tribal fish consumption studies summarized in these comments, provide both scientifically defensible and site-specific justifications to apply an RSC value of less than 1 (100%).

## **D. Body Weight**

### **1. Tribes recommend the use of 70 kg for calculating human health criteria.**

Earlier analysis of fish consumption data in Washington was based on an assumption of 70 kg as a default body weight. Citing studies of fish consumption in tribal and Asian/Pacific Islander communities, Ecology et al. (1999) recommended a default FCR of 175 g/day but stated specifically that this assumed a body weight of 70 kg and would need to be re-evaluated if the assumptions were changed.<sup>105</sup>

### **2. Ecology must consider additional regional data.**

Ecology considers tribes as the target general population in Washington and cites tribal data as consistent with an adult body weight of 80 kg. While the tribes agree that tribes are the appropriate population for consideration of risk, tribes continue to urge Ecology and EPA to consider the effect of calculating criteria with an 80 kg input variable for high fish consuming individuals with lower body weights – particularly tribal women and children and the Asian Pacific islander communities. For example, a study of fish consumption in the A/PI community in King County indicated an average body weight of 62 kg for men and women.<sup>106</sup> One of the authors, Lorenzana, has indicated in presentations that the 80 kg figure significantly overestimates bodyweight for Washington’s A/PI population, for whom the average body weight for women is just 57 kg. As a result, the chemical criteria calculations would underestimate toxicity and exposure, by over-estimating body weight, and thus develop standards that are under protective for those individuals.

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<sup>105</sup> Washington State Department of Ecology, 1999. Draft analysis and selection of fish consumption rates for risk assessments and risk-based standards. Ecology Pub. 99-200. L. Kiell and L. Kissinger and an interagency Risk Assessment Forum. <https://fortress.wa.gov/ecy/publications/publications/99200.pdf>

<sup>106</sup> Sechena, R., C.Nakano, S.Liao, N.Polissar, R.Lorenzana, S.Truong, and R.Fenske. “Asian and Pacific Islander Seafood Consumption Study in King County, Washington.” EPA 910/R-99-003. May 1999.[http://www.epa.gov/region10/pdf/asian\\_pacific\\_islander\\_seafood\\_consumption\\_1999.pdf](http://www.epa.gov/region10/pdf/asian_pacific_islander_seafood_consumption_1999.pdf)

**3. The use of a body weight value of 80 kg may under-report exposure to women and children.**

Tribal studies indicate differences in body weight between male and female respondents, and higher fish consumption (per body weight) among children. Citations of tribal values as local data may also under-report body weight for women and children. The mean body weight for women in the Tulalip fish consumption study was 68 kg. The mean weight for adult women in the Squaxin Island study was also 68 kg. The Squaxin Island study also found that children consumed fish at a rate approximately three times higher, in g/kg-day, than adults.<sup>107</sup>

National studies indicate that women, children and developing embryos face higher *risks of health impairment*.

*While a very large number of environmental toxicants are potentially harmful to health, the most commonly studied ones can be divided into three major categories: heavy metals, air pollutants, and pesticides. Prenatal exposures to heavy metals, including mercury, lead, and arsenic, are associated with increased risk for brain damage, neurodevelopmental problems, congenital malformations, miscarriage, and low birth weight. Air pollutants and pesticides also are linked to poor pregnancy outcomes.... Exposure to certain pesticides, PCBs and DDT, increases the risk of preterm birth, low birth weight, and miscarriage.*<sup>108</sup>

Although carcinogenic risk levels are proposed to be set to one-per-million, several of the toxicants have other health risks with particular repercussions to tribal women and children.

**4. Many tribes are emphasizing the importance of access to traditional foods in a healthful diet.**

Data indicating levels of Type 2 diabetes and obesity at levels substantially higher than national rates have prompted tribal communities to emphasize a return to “First Foods,” i.e., traditional sources of food such as fish and shellfish in the Pacific Northwest. The CDC has encouraged programs promoting nutrition and health in

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<sup>107</sup> U.S. Environmental Protection Agency (EPA). (2013) Reanalysis of fish and shellfish consumption data for the Tulalip and Squaxin Island Tribes of the Puget Sound Region: Consumption Rates for Consumers Only. National Center for Environmental Assessment, Washington, DC; EPA/600/R-06/080F

<sup>108</sup> Harrison E, Partelow J, Grason H. 2009. Environmental Toxicants and Maternal and Child Health: An Emerging Public Health Challenge. Baltimore, MD. Women’s and Children’s Health Policy Center. Johns Hopkins Bloomberg School Public Health.

tribal communities, noting that, “American Indians and Alaska Native communities are reclaiming traditional foods as part of the global indigenous food sovereignty movement that embraces identity, history, and traditional ways and practices to address health.”<sup>109</sup>

**5. The change in the body weight does not consider additional chemical concentration effects from the affinity of contaminants to fat tissue.**

The increase in the national recommendation for input variable for human body weight from 70kg to 80 kg will have a harmful effect on potential exposure scenarios. Persistent Organic Pollutants (POPs) have serious deleterious effects in the human body at very low levels. Most of these chemicals are lipophilic (fat soluble) and many are hydrophobic (water repellent) which increases their affinity to fat molecules.

## **E. Drinking Water Intake**

Tribes concur with Ecology’s proposal to use updated national water quality criteria values for Drinking Water Intake as these criteria reflect best available science. As we state throughout these comments, Ecology has an obligation to use EPA recommended values, absent a scientific justifications to prove otherwise.

## **F. Reference Dose and Cancer Slope Factor**

Tribes concur with Ecology’s proposal to use RfDs found in the EPA IRIS or NRWQC documents.

Tribes concur with Ecology’s proposal to use Cancer Slope Factors from EPA 2015. However, tribes object to the exemptions made for arsenic and 2,3,7,8-TCDD (dioxin). See discussion in the section on challenging chemicals.

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<sup>109</sup> Centers for Disease Control and Prevention, 2015. Traditional Foods Project. <http://www.cdc.gov/diabetes/projects/ndwp/traditional-foods.htm><http://www.cdc.gov/diabetes/projects/ndwp/traditional-foods.htm>

## G. Bioaccumulation Factors (BAF)

1. *Ecology's selection of older methods of accounting for aquatic organisms' uptake of toxic chemicals (use of BCFs rather than BAFs) and older values for bioconcentration factors (where updated values have been calculated by EPA) lacks valid justification.*

Washington Department of Ecology proposes to continue to use bioconcentration factors (BCF) in the evaluation of chemical accumulation into aquatic organisms instead of updated national guidance to use Bioaccumulation Factors. Tribes are highly reliant on upper trophic level organisms, such as salmon and Dungeness crab, which are known to accumulate toxic chemicals in tissue and organs. By not accounting for bioaccumulation through the food chain, the proposed use of criteria calculated using BCFs may under-represent toxic contamination in aquatic species to the detriment of highly exposed populations of consumers, including tribes.

- In their decision to reject the use of Bioaccumulation Factors at this time, Ecology cites “uncertainty” in the BAF model due to lipid content of various species of fish, site variability (organic carbon concentrations in water bodies), and the history of BAF adoption by other states. None of these arguments provide adequate justification for lowering criteria in the direction of reduced public health protection.
- Ecology argues that there is substantial variability in Washington waters with respect to organic carbon (as well as fish tissue lipid), and use this as a rationale for continuing to use old BCF values. Ecology fails to describe how this variability would affect the criteria compared to EPA's BAF values, nor how they would address the issue of variability. This comparison is particularly important due to the large difference between the old BCF and new BAF in some chemical criteria.
- As additional justification, Ecology states that, “The development of the [EPA's] 2015 304(a) guideline documents appears rushed.” Nonetheless, the recommended use of the BAF approach has been part of EPA guidance since 2000. Recent guideline documents from EPA in 2014-2015 added specificity for the calculation of individual chemical criteria via the BAF approach, and should be adopted by Ecology as best available science. Moreover, Ecology does not propose to adopt updated values for BCF's either, citing concerns over site-specific variability.

Ecology states that they will consider new information on BAFs in the development of the final rule. Ecology should provide chemical-by-chemical justification for their choice to reject updated science. In combination with other decisions made by the state as part of the draft

rule, including the use of a relative source contribution of 100 percent, the failure to account for bioaccumulation will likely result in criteria that are under-protective of tribal fish consumers and other high fish consuming populations.

2. Consistent With EPA's Updated 304(A) National Recommendations, Ecology Should Utilize Bioaccumulation Factors To More Accurately Represent The Presence of Toxics in Tissue

In order to prevent harmful exposures to waterborne chemicals through the consumption of contaminated fish and shellfish, water quality criteria for the protection of human health “must address the process of chemical bioaccumulation in aquatic organisms”<sup>110</sup>. Accordingly, EPA’s *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* recommends “the use of a bioaccumulation factor (BAF) to reflect the uptake of a contaminant from all sources (e.g., ingestion, sediment) by fish and shellfish, rather than just from the water column as reflected by the use of a bioconcentration factor (BCF).”<sup>111</sup>

The use of a BAF better represents the amount of a contaminant accumulating in an organism because it accounts not only for the organism’s exposure to the pollutant in the water column, but also from the food chain and surrounding environment, as well as biotransformation of the pollutant in the organism due to metabolic processes.<sup>112</sup> For some chemicals (particularly those that are highly persistent and hydrophobic), the magnitude of bioaccumulation by aquatic organisms can be substantially greater than the magnitude of bioconcentration. Thus, an assessment of bioconcentration alone would underestimate the extent of accumulation in aquatic biota for these chemicals.<sup>113</sup>

To calculate the criteria in its draft rule, Ecology has proposed to continue to use BCFs from the NTR. In addition to claims that the BAF method has uncertainties and that BAF guidelines are too new to incorporate into state rule-making, Ecology also claims that BCFs are “more closely related to the specific environmental media (water) that is regulated under the Clean Water Act,”<sup>114</sup> and therefore are justified. However, nothing in the CWA, suggests that once a

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<sup>110</sup> U.S. Environmental Protection Agency (EPA). 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. Office of Water, Office of Science and Technology. EPA-822-B-00-004. October.

<sup>111</sup> Id

<sup>112</sup> U.S. Environmental Protection Agency (EPA). 2014a. *Draft Update of Human Health Ambient Water Quality Criteria: Benzo(a)Pyrene*. EPA 820-D-14-012. Office of Water, Office Science and Technology. May.

<sup>113</sup> EPA. 2000. *Supra*

<sup>114</sup> Ecology. 2016. Overview of Key Decisions. pg 43



pollutant is discharged and it moves through the *aquatic* environment through bioaccumulation, it is somehow not within the scope of the act's jurisdiction. Quite the contrary, the CWA is specifically intended to protect those designated uses, including aquatic organisms, and does not solely focus on the water column.<sup>115</sup> See recent comments on Washington's proposed 2016 Human Health Criteria from Earthjustice section III.C.2 for additional justification of why selection of BAF is not a CWA jurisdictional issue. Moreover, Ecology appears to defy applicable EPA national guidance, by suggesting that BAFs are not appropriately applied under the CWA or via the development of human health criteria for Washington. This is illogical, considering EPA has applied BAFs in the calculation of criteria for both Washington and Maine.<sup>116</sup>

As Ecology has acknowledged in their *Overview of Key Decisions*, the majority of BCF values used to calculate the State's draft criteria have been carried over from 1980 criteria documents.<sup>117</sup> EPA published, reviewed, and issued final national criteria for water quality for most of the priority pollutants in 2014-2015, and issued supplemental information on BAFs in January, 2016.<sup>118, 119</sup> Ecology should adopt the EPA's proposed values<sup>120</sup> for the BAF/BCF calculations in the proposed state rule. Given the lengthy delay in adopting human health criteria on the part of the state, it is likely to be many years before the state again undertakes a review of adopted HHC.

For many persistent bioaccumulative chemicals, the BAF and updated BCF values published by EPA<sup>121</sup> are significantly higher than the previously used BCF values because they also take into account accumulation in fish and shellfish through the food chain. Because the BCF values used by Ecology are included in the denominator of the equation for calculating human health criteria, the higher the value is, the lower (more stringent) the criteria become.

For a number of bioaccumulative chemicals included on Ecology's Persistent Bioaccumulative Toxins (PBT) List, which Ecology terms the "worst of the worst", and which includes a number of carcinogenic PAHs and chlorinated pesticides, the average BAF value for these chemicals is

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<sup>115</sup> See e.g. *PUD No. 1 of Jefferson Cty. v. Washington Dept. of Ecology*, 511 U.S. 700 (1994)

<sup>116</sup> EPA proposed HHC applicable to Washington: 80 Fed. Reg. 55065, (Sept 14, 2015); EPA proposed HHC applicable to Maine: 81 Fed. Reg. 23239, 23247 (April 20, 2016)

<sup>117</sup> Washington Department of Ecology (Ecology). 2016. *Washington Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. Publication no. 16-10-006. January.

<sup>118</sup> EPA, June 29, 2015.

<sup>119</sup> EPA, 2016. National Bioaccumulation Factors – Supplemental Information (January, 14, 2016)

<sup>120</sup> EPA, September 14, 2015.

<sup>121</sup> *Id*

more than 100 times higher than the average BCF value. By not accounting for bioaccumulation or biomagnification through the aquatic food chain, the criteria proposed by Ecology, utilizing BCFs rather than BAFs, may significantly underestimate the accumulation of contaminants in fish and shellfish, and the resulting criteria may be significantly underprotective of consumers of fish and shellfish from Washington's waters. This is problematic considering chemicals such as PAHs are among the most common contaminants measured in Puget Sound shellfish.<sup>122</sup>

3. *Ecology appropriately emphasizes the need for sediment cleanup, but continues to segment this relationship to water quality in its regulatory responsibilities.*

Page 33 of Ecology's Decisions document cites studies of toxic concentrations in Puget Sound, pointing out that, "the results underscore the importance of sediment cleanup activities for reducing contaminant uptake and bioaccumulation in the urban bays and at regional contaminant 'hot spots.'"<sup>123</sup> Although the argument is intended to highlight the complexity of predicting bioaccumulation of toxics in aquatic organisms from water alone, it appears to do just the opposite—making a case for the importance of using a BAF model to calculate uptake of toxic chemicals by organisms in Puget Sound, where exposure pathways encompass both sediment and water.

Ecology has recently attempted to treat toxic cleanup of contaminated sediments as unrelated to the quality of the associated water column. During amendments to the state's Sediment Management Standards from 2011-2015, the state sought to remove important regulatory linkages between sediment and water column cleanup, by removing the SMS from review under the Clean Water Act. Tribal concerns were detailed in the attached letter from the Suquamish Tribe to the EPA in 2015.<sup>124</sup> Once again, the Department of Ecology appears to sidestep the relationship between toxic cleanup and the protection of designated uses by using a narrow method (BCF) to calculate bio-accumulation.

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<sup>122</sup> Washington Department of Fish and Wildlife (WDFW). 2014. *Toxic Contaminants in Puget Sound's Nearshore Biota: A Large-Scale Synoptic Survey Using Transplanted Mussels (Mytilus trossulus)*. WDFW Report Number FPT 14-08. Puget Sound Ecosystem Monitoring Program (PSEMP). September.

<sup>123</sup> Osterberg and Pelletier, 2015. Puget Sound Regional Toxics Model, as cited in Ecology 2016 Overview of key decisions in rule amendment. Publication no. 16-10-006.

<sup>124</sup> Suquamish Tribe; October 26, 2015. Letter from Chairman Forsman to Regional EPA Administrator McLerran.

### III. CHALLENGING CHEMICALS AND OTHER PROVISIONS

- A. Arsenic
- B. Mercury
- C. PCBs
- D. 2,3,7,8-TCDD
- E. Protection of downstream uses

#### A. Arsenic

Ecology proposes to establish the HHC for arsenic at the levels equivalent to the Safe Drinking Water Act, based on the high concentrations of naturally occurring arsenic in regional geology and regulatory precedent by other states. This proposal would potentially raise the allowable concentration of arsenic in permitted discharges by a factor of several hundred, a drastic increase that is not protective of human health. Changing arsenic to a SWDA standard does not change the fact that arsenic has serious health impacts and has been shown to have economic impacts reducing the marketability of seafood. As pointed out by Ecology in the Decisions document, numerous anthropogenic sources of arsenic already enter Washington waters, and these discharges would potentially be masked by a transition to the SWDA standard. Ecology's argument that other states use the SWDA ignores other state strategies, such as Oregon's, that attempt to address background levels of arsenic while recognizing the potential for arsenic to accumulate in fish tissue. Ecology should adopt the EPA proposal for arsenic, and focus on a strategy that would monitor and minimize the discharge of any additional arsenic into Washington waters from pesticides, products containing arsenic, or municipal treatment systems.

1. **Ecology must reconsider use of the Safe Drinking Water Act (SDWA) arsenic standard of 10µg/L and recalculate standards that reflect protection of designated uses.**
2. The tribes request that Ecology reconsider their proposed arsenic water quality standard based on the comments below. The use of the SDWA standard for arsenic as a surrogate, is neither protective of human health, nor compliant with the Clean Water Act, and therefore should not be used as a water quality standard. Ecology should calculate a standard for arsenic that ensures human health is protected of both chronic

and acute exposures, takes into consideration multiple pathways of exposure – not just drinking water, and implements the precautionary principle by erring on the side of protection of human health in light of purported “uncertainty” of the cancer slope factor. **Arsenic is a ubiquitous, harmful toxic substance, which causes serious health impacts at low doses.**

#### **a. Arsenic and its sources**

Arsenic, a naturally occurring element, has properties of both a metal and a nonmetal. However, arsenic is generally referred to as a metal and is a solid, steel grey material in its elemental form.

In its inorganic form, it is usually found in the environment combined with other elements, including sulfur, oxygen, or chlorine.<sup>125</sup> Inorganic arsenic compounds include arsenic acid, arsenic trioxide, and arsenic pentoxide. Arsenic can also combine with hydrogen and carbon, creating organic arsenic compounds (metalloids), such as arsanilic acid, arsenobetaine, and dimethylarsinic acid.<sup>126</sup> Most inorganic and organic arsenic compounds are odorless, tasteless, white or colorless powders that do not evaporate.<sup>127</sup> Naturally and man-made inorganic arsenic can be found in soil, many kinds of weathered rock, results of smelting, combustion of fossil fuels, exposed mining waste, wood preservative facilities and ground water associated with mining.<sup>128</sup> Inorganic arsenic is especially associated with minerals and ores that contain copper or lead. Heating these types of ores in smelters will precipitate most of the arsenic as a fine dust which enters the atmosphere. Collection of arsenic by smelters as a compound called arsenic trioxide (As<sub>2</sub>O<sub>3</sub>) can be achieved. Copper chromated arsenate (CCA) is the preservative used to make “pressure-treated” wood. Arsenic treated wood products continue to be used in industrial applications.

Organic arsenic compounds, namely cacodylic acid, disodium methylarsenate (DSMA), and monosodium methylarsenate (MSMA) are used as pesticides. Other uses of organic

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<sup>125</sup> ATSDR (Agency for Toxic Substances and Disease Registry). 2007. Toxicological profile for Arsenic. US Department of Health and Human Services. Public Health Service. CAS#: 7440-38-2

<sup>126</sup> EPA (U.S. Environmental Protection Agency). 2012b. Arsenic Compounds Hazard Summary. Available at <http://www.epa.gov/ttn/atw/hlthef/arsenic.html>.

<sup>127</sup> ATSDR 2007

<sup>128</sup> See Ferguson, J.F. and J. Gavis. 1972. A review of the arsenic cycle in natural waters. *Water Research* 6: 1259-1274; Smedley, P.L. and D. G. Kinniburgh. 2001. A review of the source, behavior and distribution of arsenic in natural waters. *Applied Geochemistry* 17: 517-568; Wang, S. and C.N. Mulligan. 2006. Occurrence of arsenic contamination in Canada: sources, behavior and distribution. *Science of the Total Environment* 366: 701-721.

arsenic include, additives in animal feed and an additive to other metals to form metal mixtures or alloys with improved properties. Predominantly, arsenic in alloys is used in lead-acid batteries for automobiles, as well as is in semiconductors and light-emitting diodes.<sup>129</sup>

Arsenic occurs naturally in the Earth's crust, as well as through deposition from anthropogenic sources and industrial processes.<sup>130</sup> Arsenic from deposition enters the water, sediment, soil, and air, and eventually accumulates throughout the food chain.

Anthropogenic sources of arsenic include agricultural insecticides, larvicides, herbicides, and wood preservatives.<sup>131</sup> Almost 80 percent of arsenic produced by humans is released into the environment through pesticides<sup>132</sup>. Arsenic is found in soils at higher concentrations than the state Model Toxics Control Act (MTCA) cleanup levels in residential areas near Tacoma, WA and was distributed from Asarco Tacoma smelter emissions while in operation from 1890 to 1986.<sup>133</sup>

#### **b. Human Health Impacts Associated with Arsenic<sup>134</sup>**

For most of the population, uptake of arsenic through food is the major source of exposure. Among foods, the highest concentrations of arsenic are generally found in fish and shellfish, existing primarily as organic compounds. EPA has classified inorganic arsenic as a human carcinogen. Human exposure to inorganic forms of arsenic may occur through drinking water. Further, elevated concentrations of inorganic arsenic may be present in soil because of natural mineral deposits or contamination from human activities, resulting in human exposure through dermal contact or ingestion.

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<sup>129</sup> ATSDR. 2007. Supra

<sup>130</sup> Bligh, R. and R. Mollehuara. 2012. Arsenic- Sources, Pathways, and Treatment of Mining and Metallurgical Effluents. Outotec. Output SEAP. Available at: [http://www.outotec.com/imagevaultfiles/id\\_552/cf\\_2/arsenic\\_-\\_sources\\_-\\_pathways\\_and\\_treatment\\_of\\_minin.pdf](http://www.outotec.com/imagevaultfiles/id_552/cf_2/arsenic_-_sources_-_pathways_and_treatment_of_minin.pdf).

<sup>131</sup> Bligh and Mollehuara.2012

<sup>132</sup> Id.

<sup>133</sup> Golding, S. 2001. Survey of typical soils arsenic concentrations in residential areas of the City of University Place. Ecology Publication No. 01-03-008. Washington Department of Ecology, Environmental Assessment Program, Olympia, WA. 50p.

<sup>134</sup> See 66 Fed Reg 6976 at 7000 for additional discussion on health impacts associated with Arsenic exposure, incorporated here by reference.

Additionally, inorganic arsenic released into the air from metal smelting processes or combustion of wood treated with arsenical wood preservative poses risks through inhalation.<sup>135</sup>

Acute oral doses of 600 micrograms per kilogram body weight per day ( $\mu\text{g}/\text{kg}/\text{d}$ ) or higher of inorganic arsenic has resulted in death in humans. Lower dose ingestions include effects to the gastrointestinal tract, central nervous system, cardiovascular system, liver, kidney, and blood. Short-term inhalation exposure to inorganic arsenic has resulted in effects to the central and peripheral nervous system. Acute inhalation of arsine, a gas consisting of arsenic and hydrogen, has resulted in mortality at a concentration of 25 to 50 parts per million (ppm) in air.<sup>136</sup> Chronic oral exposure to elevated levels of inorganic arsenic has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, gangrene of the extremities, vascular lesions, and liver or kidney damage in humans. Elevated arsenic concentrations in drinking water (including drinking water from wells) have been associated with behavioral and neurocognitive effects in children. Ingestion of inorganic arsenic has also been linked to a form of skin cancer and an increased risk of bladder, liver, and lung cancer. Effects associated with the chronic inhalation of inorganic arsenic include: dermatitis, conjunctivitis, rhinitis, and pharyngitis, or irritation of the mucous membranes and skin. Additionally, inhalation exposure to inorganic arsenic has been shown to be strongly associated with lung cancer<sup>137</sup>. Several studies have suggested reproductive and developmental effects caused by arsenic exposure; however, the studies are not definitive. Inorganic arsenic can cross the human placenta, exposing the fetus, and there is evidence that exposure to arsenic in the womb and during early childhood may increase young adult mortality. Women working or living in close proximity to metal smelters have shown elevated rates of spontaneous abortion or deliver children with lower than normal birth weights.<sup>138</sup> Studies in animals show that large arsenic doses cause low birth weight, fetal malformations, fetal death, and illness in pregnant females.<sup>139</sup> Low-levels of arsenic have been found in breast milk, and chronic exposure in children may result in lower IQ scores.<sup>140</sup>

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<sup>135</sup> EPA. 2012. *supra*

<sup>136</sup> *Id*

<sup>137</sup> *Id.*

<sup>138</sup> *Id*

<sup>139</sup> ASDTR. 2007

<sup>140</sup> EPA.2012

**3. Ecology's proposal to use the SDWA standard for Arsenic is not protective of the designated uses, and therefore is not compliant with the CWA**

As discussed in more detail in section III, the CWA, among many things, requires states to establish water quality standards that protect the designated uses. In establishing standards for the protection of human health, EPA recommends the methodology employed in their guidance document "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health." Nothing in this document suggests that other health-based standards should be adopted whole cloth as surrogates, while circumventing calculation of criteria.<sup>141</sup>

**a. The SDWA is not an appropriate CWA surrogate**

EPA's SDWA standard for Arsenic is not an appropriate standard to ensure protection of designated uses, because the final standard represents a negotiated outcome, which was selected – not for its protection of chronic and acute exposures to arsenic - but in for its value as a standard which balances many of the SDWA's competing goals. As a result, the proposed surrogate does not satisfy the CWA tests for ensuring protection of designated uses. To further understand this rationale, it is beneficial to understand more about the SDWA Arsenic standard.

**i. Standard setting under the SDWA is based on different goals than CWA.**

Distinguished from the CWA's singular aim to develop Water Quality Standards that protect designated uses, the SDWA requires the setting of both upper and lower limits for the protection of human health based on several factors.<sup>142</sup> The lower bounds set a protection of human health goal "at the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety."<sup>143</sup> The upper bound limits are to be based

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<sup>141</sup> See EPA.2000.Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health, publication number EPA-822-B-00-004. Page 1-8 Available at [http://water.epa.gov/scitech/swguidance/standards/upload/2005\\_05\\_06\\_criteria\\_humanhealth\\_method\\_complete.pdf](http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_complete.pdf). Where EPA discusses the need to develop consistency between CWA and SDWA, but explains that CWA and SDWA take different approaches. For example, EPA provided that "[w]ith the 2000 Human Health Methodology, EPA will publish its national 304(a) water quality criteria at a 10-6 risk level, which EPA considers appropriate for the general population. EPA is increasing the degree of consistency between the drinking water and ambient water programs, given the somewhat different requirements of the CWA and SDWA."

<sup>142</sup> See 42 USC § 300g

<sup>143</sup> § 300(b)(4)(A)

as close as possible on the lower bound health limits, while still being “feasible.”

<sup>144</sup> The SDWA provides a list of factors in determining what is “feasible.”

*the term “feasible” means feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration).<sup>145</sup>*

Additionally, the SDWA provides EPA with the discretion to determine whether or not the quantifiable and nonquantifiable benefits of an MCL justify the quantifiable and nonquantifiable costs.<sup>146</sup> The 1996 amendments to SDWA further provide to EPA the discretionary authority to then set MCLs that are less protective than what is feasible, when the cost benefit analysis does not justify the “costs of complying.”<sup>147</sup> Under this discretionary authority, EPA need only demonstrate that the MCL “maximize[s] health risk reduction benefits at a cost that is justified by the benefits.”<sup>148</sup>

In contrast to this discretionary authority that allows for standards to be based in part on treatment limitations, and in part upon the “cost of complying,” nothing in the CWA requires the setting of water quality standards to be based either on cost or best available technology. In fact, amendments to the Federal Water Pollution Control Act, ushering in a water quality standard based regulatory system, were developed in light of the limitations of solely applying technology based limits as an environmental standard.<sup>149</sup> In EPA’s history of water quality

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<sup>144</sup> §300(b)(4)(B)

<sup>145</sup> § 300(b)(4)(D)

<sup>146</sup> § 300(b)(3)(C)(i)

<sup>147</sup> §300(b)(6)(a)

<sup>148</sup> id

<sup>149</sup> EPA. Water Quality Standards History, Available at <http://water.epa.gov/scitech/swguidance/standards/history.cfm> providng

The decade of the 1970’s saw State and EPA attention focus on creating the infrastructure necessary to support the NPDES permit program and development of technology-based effluent limitations. While the water quality standards program continued, it was a low priority in the overall CWA program. In the late 1970’s and early 1980’s, it became obvious that greater attention to the water quality-based approach to pollution control was needed to effectively protect and enhance the nation’s waters.



standards they explain that for toxics, water quality, as opposed to technology based standards, where necessary to address this priority national issue.

In the late 1970s, a greater appreciation evolved on the need to expand and accelerate the control of pollutants in surface waters using water quality-based controls. It became clear that primary reliance on industry effluent guidelines or effluent standards under Section 307 of the Act would not comprehensively address pollutants, particularly toxic pollutants, and that existing State water quality standards needed to be better developed. EPA moved to strengthen the water quality program to complement the technology based controls.

To facilitate this effort, EPA decided to amend the Water Quality Standards Regulation to explicitly address toxic criteria requirements in State standards and other legal and programmatic issues. This effort culminated in the promulgation of a revised water quality standards regulation on November 8, 1983 (54 FR 51400), which is still in effect. This regulation is much more comprehensive than its predecessor and it includes many more specific regulatory and procedural requirements. Nonetheless, it is still a succinct and flexible regulation for a program with a

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The first statutory evidence of this was the enactment of a CWA requirement that after December 29, 1984, no construction grant could be awarded for projects that discharged into stream segments which had not, at least once since December 1981, had their water quality standards reviewed and revised or new standards adopted as appropriate under Section 303(c). The efforts by the States to comply with this onetime requirement essentially made the States' water quality standards current as of that date for segments with publicly-owned treatment works (POTWs) discharging into them.

Additional impetus to the water quality standards program occurred on February 4, 1987, when Congress enacted the Water Quality Act of 1987 (Pub. L. 1004). Congressional impatience with the lack of progress in State adoption of standards for toxics (which had been a national program priority since the early 1980's) resulted in the 1987 adoption of new water quality standard provisions in the Water Quality Act amendments. These amendments reflected Congress' conclusion that toxic pollutants in water are one of the most pressing water pollution problems.

scope as broad as the national water quality criteria and standards program.<sup>150</sup>

As a result, today's technology-based standards are applied only to NPDES permits, and only to the extent that water quality standards are not violated using such a standard -- otherwise a water quality-based effluent limitation (WQBEL) is required for an NPDES permit.<sup>151</sup> Technology limits are not applied for the purpose of determining the acceptable level of pollutants that will ensure protection of designated uses (as administered through section 303, 401). As EPA has explained, the priority issues of toxic pollution were significant drivers in the reformation of what was primarily a technology based pollution control system.

- ii. EPA's Arsenic rule is a negotiated technology-based standard that sets levels of contaminants far exceeding both MCLG and the level that was feasible.

In 2000, EPA originally proposed a health-based, non-enforceable goal, or Maximum Contaminant Level Goal (MCLG) of zero micrograms per liter (µg/L) for Arsenic.<sup>152</sup> EPA also proposed as a preferred standard, the upper bound, or Maximum Contaminant Level (MCL) of 5 µg/L.<sup>153</sup> In proposing this standard, EPA also clearly stated that a more protective standard of 3 µg/L was in fact the "feasible" standard under the meaning of the SDWA. The 3 µg/L feasible MCL was established after considering treatment costs and efficiency under field conditions as well as considering the appropriate analytical methods.<sup>154</sup> However, because EPA determined that the benefits of regulating arsenic at the feasible level would not justify the costs, the EPA eventually proposed an MCL of 5 µg/L, while requesting comment on MCL options of 3 µg/L (the feasible level), as well as, 10 µg/L, and 20 µg/L.<sup>155</sup>

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<sup>150</sup> EPA. Water Quality Standards History. Available at <http://water.epa.gov/scitech/swguidance/standards/history.cfm>

<sup>151</sup> EPA. "NPDES Permit Writers' Manual." September 2010. Document No. EPA-833-K-10-001. pp. 1-3-1-5.

<sup>152</sup> 66 FR 6979

<sup>153</sup> id

<sup>154</sup> id

<sup>155</sup> 66 FR 6980

After consideration of public comments, EPA ultimately adopted a MCL of 10 µg/L, which greatly exceeded the feasibility standard, of which the SDWA encourages adoption of. In doing so EPA, explained that they reexamined the proposed MCL of 5 µg/L and in comparing this level to 10 µg/L, EPA determined that the benefit-cost relationships were less favorable for 5 µg/L, and that the total national costs at 5 µg/L are also approximately twice the costs of an MCL of 10 µg/L.<sup>156</sup> After determining that associated issues of cost, EPA invoked their discretionary authority for only the second time since passing the SDWA amendments in 1996<sup>157</sup> to set an MCL less protective than what was “feasible” in an effort to address the identified economic concerns. Therefore, by EPA’s own admissions, the SDWA standard for arsenic does not ultimately achieve a standard designed solely to protect human health, but instead seeks to balance numerous additional external considerations, e.g. cost of compliance, which are not relevant to determining a safe chronic exposure threshold necessary for protecting designated uses. If Ecology were to import an analogous standard from the SDWA to achieve the purposes of the CWA, a more appropriate standard would be the MCLG.

- iii. The SDWA standard does not account for arsenic exposure via bioaccumulation of fish and subsequent fish consumption, and therefore does not protect the fishable designated use or human health.

Another significant flaw in using the SDWA standard as a surrogate for HHC, is that it does not set standards based on multiple exposure pathways. The SDWA is a drinking water only standard, whereas the HHC per EPA’s 2000 AWQC guidance, is required to develop criteria based on exposures through fish consumption *and* drinking water (in the case of freshwater criteria). Setting standards based on multiple exposure pathways is important for several reasons. First, one of the designated uses protected by the HHC, is the “fishable” use, and as EPA has recently noted in the partial disapproval of Maine’s water quality standards, that use also inherently includes the protected right to safely consume fish and shellfish.<sup>158</sup> Therefore, in order to protect the use of safe

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<sup>156</sup> Id

<sup>157</sup> 66 FR 7020

<sup>158</sup> Letter from Curtis Spalding EPA Regional Administrator to Patricia W.Aho, Commissioner February 2 2015  
Appendix A

consumption of seafood (also a treaty-reserved right), the CWA must account for safe levels of arsenic. To do that, Ecology must consider both safe levels of arsenic in shellfish and finfish, as well as safe levels of drinking water, which will both be consumed daily. Second, it is important that Ecology consider Arsenic exposure through consumption of seafood, because those exposure pathways may represent the highest levels of exposure. According to the ASTDR:

***For most people, diet is the largest source of exposure to arsenic. Mean dietary intakes of total arsenic of 50.6 µg/day (range of 1.01–1,081 µg/day) and 58.5 µg/day (range of 0.21–1,276 µg/day) has been reported for females and males (MacIntosh et al. 1997). U.S. dietary intake of inorganic arsenic has been estimated to range from 1 to 20 µg/day, with grains and produce expected to be significant contributors to dietary inorganic arsenic intake (Schoof et al. 1999a, 1999b). The predominant dietary source of arsenic is generally seafood. Inorganic arsenic in seafood sampled in a market basket survey of inorganic arsenic in food ranged from <0.001 to 0.002 µg/g (Schoof et al. 1999a, 1999b).<sup>159</sup>***

Additionally, it is well understood that aquatic species bioaccumulate and bioconcentrate arsenic.<sup>160</sup> These aquatic species are then consumed, and transferred to the human body.

Failing to base an arsenic standard on bioaccumulation and subsequent fish consumption exposure pathways in combination with drinking water intake, will not result in water quality standards that are calibrated to protect the “fishable” designated use, nor calculated to estimate likely exposure of arsenic at levels protective of human health. Instead, the SDWA surrogate is likely to result in a gross underestimate of exposure.

A good example that demonstrates the disparity between a drinking water only standard and a drinking water and fish consumption-based standard, is to

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<sup>159</sup> See ASTDR. 2007. Toxicological Profile for Arsenic at page 315. Available at <http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf>

<sup>160</sup> See M. Azizur Rahman, Hiroshi Hasegawa, Richard Peter Lim. 2012. Bioaccumulation, biotransformation and trophic transfer of arsenic in the aquatic food chain. *Environmental Research*, Volume 116, July 2012, Pages 118–135; See also ASTDR. 2007. Toxicological Profile for Arsenic. Available at <http://www.atsdr.cdc.gov/toxprofiles/tp2.pdf>

compare the current NTR with the SDWA arsenic rule. The existing NTR (although underestimating the exposure by utilizing an inaccurate FCR) sets arsenic water quality standards at .018 µg/L for freshwater and 0.14 µg/L for marine waters. These standards were calculated using methodology relatively consistent with EPA's 2000 AWQC guidance to account for protection of human health and the fishable designated use. Essentially, this criterion stands for the assumption that safe water quality standards for arsenic (even assuming gross underestimation of fish consumption rates) are below 1µg/L. Also, as a point of comparison, Oregon's water quality standards also utilized EPA's 2000 AWQC guidance, and even though greatly increased the risk level from  $10^{-6}$  to  $10^{-4}$ , set standards at 2.1 µg/L and 1.0 for fresh and marine water criteria respectively. When we compare these levels with the proposed 10µg/L (for total arsenic) imported from the SDWA, it demonstrates that utilizing EPA methodology (AWQ HHC guidance) that accounts for both seafood and drinking water intake results in a much different and much more protective standard. This additional protection is presumably necessary to meet multiple CWA goals, which includes the safe consumption of seafood. To assume otherwise, is to invalidate the purpose of the EPA's 2000 methodology.

The comparison between the AWQC guidance derived criterion and SDWA derived criterion, also demonstrates that SDWA standard is likely to introduce excessive risk, not otherwise approvable by EPA. If Ecology were to use EPA's 2000 methodology to arrive at a criterion value equal to that of the SDWA's arsenic standard of 10 µg/L then it would require Ecology to utilize a cancer risk level well below EPA's recommended levels. For example, if Oregon calculated an arsenic criteria of 1.0 µg/L for marine waters using an FCR of 175 gpd and a cancer risk level of  $10^{-4}$ , then Ecology, which has similarly proposed an FCR of 175gpd would need to utilize a cancer risk level in the range of  $10^{-3}$  (of course adjusting for differences between total arsenic and inorganic ) to result in a criteria similar to the proposal. This further demonstrates that Ecology is setting a criteria which proposes substantial risk, which is likely to exceed EPA's allowable thresholds and is inconsistent with AWQC guidance.

Therefore, the proposed arsenic standard of 10 µg/L does not meet the necessary tests for designated use protection, because it ignores the most significant exposures, is not calibrated to address all of the CWA goals, including fishable designated use protection, and exceeds EPA thresholds for an allowable risk level.

**b. Increasing allowable arsenic concentrations sets the stage for violations of the CWA's anti-backsliding laws.**

The National Discharge Elimination System (NPDES) is designed to ratchet down on pollution discharges over time, with the goal of eliminating pollution and restoring the nation's waters.<sup>161</sup> Under the NPDES program, pollution effluent limits should be reduced as the regulated facility moves through multiple five-year permit cycles. The CWA expressly prohibits the development of NPDES permit effluent limitations that authorize an *increase* in the discharge of pollutants, stating, "a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit."<sup>162</sup> This prohibition is known as "anti-backsliding." Although the anti-backsliding provisions of the CWA are subject to some exceptions (such as availability of new information), nothing in the law expressly provides for changes in regulation that are intended to make compliance easier for the regulated community.<sup>163</sup> In fact, the anti-backsliding provisions were intended to accomplish quite the opposite – to prevent the discharge elimination goals of the act from being shifted by political winds. However, by setting revised standards that are significantly less protective than those previously codified, Ecology is setting the stage for development of subsequent effluent limitations "which are less stringent than the comparable standards," because the standards that they will ultimately be based on will now allow in excess of a hundred times more arsenic than previously authorized. Moreover, these new allowances for pollution are not based on new science demonstrating that arsenic is somehow less harmful and therefore larger doses are now considered acceptable. In fact, it is quite the opposite – Ecology acknowledges that the SDWA-based standard is above natural background concentrations, and is not based most recent update of the IRIS cancer potency factor (1998).<sup>164</sup>

**c. Ecology's proposed footnote requiring AKART and a pollution minimization plan is a positive step, but is not a mitigating factor for a less stringent standard.**

It is noted that Ecology does state - through the use of a footnote in the arsenic standard - that facilities will be required to implement all known, available, and

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<sup>161</sup> See 33 USC § 1251 et seq

<sup>162</sup> See 33 USC §1342(o)(1)

<sup>163</sup> See 33 USC §1342(o)(2)

<sup>164</sup> Ecology. 2016. Overview of Key Decisions. pg 59-60

reasonable methods of prevention, control, and treatment (AKART) implemented through the development of pollutant minimization plan, regardless of the relaxing of arsenic criteria. The footnote is an important reminder of state legal requirements that permittees must comply with when developing effluent limits. However, the footnote is not mitigation for excessively relaxing the arsenic standard, because it introduces no new regulatory requirements. The requirement to apply AKART has long been established by state law, and all discharge permits are required to meet these minimums.<sup>165</sup>

**d. Uncertainty regarding the cancer potency factor for arsenic is not a reason to use a technology based standards for designated use protection.**

The predominant justification for not using the AWQC guidance for calculation of an arsenic standard is the purported “uncertainty” surrounding the cancer potency factor (CPF).<sup>166</sup> Ecology notes that EPA is reexamining the existing CPF in the IRIS database, and therefore the existing CPF should not be used until updates are completed. Ecology further points out that neither the California toxics rule, nor the SDWA arsenic standard used the most recent CPF (1998). The presence of some uncertainty is not *justification to increase* arsenic pollutant concentrations and subsequent potential exposures. If there is in fact a lack current scientific consensus, it is best to apply the precautionary principal, i.e. if an action or policy has a suspected risk of causing harm to human health, then the burden of proof that the action is *not* harmful falls on those taking an action. Merely demonstrating the existence of some uncertainty does not satisfy that burden. In the case of the arsenic, that burden of proof has not been satisfied, based on the aforementioned reasons.

Additionally, it is worth noting that despite purported uncertainty surrounding CPFs in the California Toxics Rule and SDWA, both Oregon’s, EPA’s national recommended 304(a) criteria, and EPA’s proposed human health criteria applicable to Washington, have utilized an arsenic CPF to calculate criteria using EPA’s 2000 AWQC guidance methodology. Ecology should strongly consider following a similar approach.

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<sup>165</sup> See RCW 90.48.520 requiring AKART for discharge of “toxicants” and stating “all known, available, and reasonable methods of prevention, control, and treatment.”

<sup>166</sup> Ecology. 2014. Washington Water Quality Standards: Human health criteria and implementation tools: Overview of Key decisions document, at page 46.

## B. Mercury

**Northwest Indian Fisheries Commission requests that Ecology not defer updating criteria for Mercury. Ecology should utilize EPA guidance in combination of with the application of regional FCRs, to develop a methylmercury standard.**

Ecology proposes that a single parameter remain under the NTR - mercury (total Mercury). The justification for this decision is not based on a lack of science, or a lack of information to suggest that mercury is a ubiquitous problem in the state. In fact, it is quite to the contrary, EPA has developed guidance on establishing Mercury criterion<sup>167</sup> and implementing it<sup>168</sup>(subsequent the publication of the NTR), and numerous Ecology, and Department of Health studies have shown that Mercury is a serious pollution issue in the state of Washington.<sup>169</sup> In fact mercury is continually indentified as a leading problem contaminant for fish health advisories, and therefore has a direct effect on treaty-reserved resources. Nonetheless, Ecology has taken an approach to delay updating Mercury criteria, because they believe updating standards should coincide with a the development of a "comprehensive implementation plan."<sup>170</sup> In doing so, Ecology ignores that there is ample new science, including information regarding FCRs and Bioaccumulation Factors (both of which are discussed at length in this review), which render the current standards inaccurate. Ecology is therefore obligated as a delegated authority to revise mercury standards applying updated, best available science. Ecology should utilize EPA guidance in combination of with the application of regional FCRs, to develop a methyl mercury standard.

### **1. Methylmercury is extremely harmful to human health, and fish consumption is the major exposure pathway.**

The major pathway for human exposure to methylmercury is consumption of contaminated fish. Dietary methylmercury is almost completely absorbed into the blood and is distributed

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<sup>167</sup> EPA. 2001. Water Quality Criteria: Notice of Availability of Water Quality Criteria for the Protection of Human Health: Methyl Mercury available at 66 FR 1344.

<sup>168</sup> EPA. 2010. Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion. EPA 823-R-10-001. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

<sup>169</sup> See Puget Sound Toxics Loading Study Phases 1-3; Department of Health Fish Advisories; Washingtons Water Quality Assesment and 303(d) list, available at <http://www.ecy.wa.gov/programs/wq/303d/currentassessmt.html>  
Ecology. 2003. Mercury Chemical Action Plan. Department of Ecology Publication No. 03-03-001

<sup>170</sup> Ecology. 2015. Overview of Key Decisions. page 51



to all tissues including the brain; it also readily passes through the placenta to the fetus and fetal brain.<sup>171</sup>

Sources of mercury include atmospheric deposition, erosion, urban discharges, agricultural materials, mining, combustion, and industrial discharges.<sup>172</sup> Mercury exists in three chemical forms: methylmercury, elemental mercury, and other mercury compounds (both inorganic and organic). However, methylmercury is the most important form toxicologically, because it can be readily taken up across lipid membrane surfaces. Moreover, methylmercury can be bioconcentrated in fish tissues over a thousand times from water concentrations as low or lower than 1 micrograms per liter (µg/L).<sup>173</sup> Exposure to methylmercury is usually through ingestion of fish and shellfish. Minamata disease from eating fish with methylmercury from industrial sources discharged to Minamata Bay in Japan is a famous example of mercury poisoning.<sup>174</sup> Thousands of people suffered from methylmercury poisoning. In terms of determining risk from exposure to mercury, various factors need to be taken into account. These factors include the chemical form of mercury, the dose, the age of the person exposed, the route of exposure, and the overall health of the person exposed. High levels of mercury exposure can have impacts on the brain, heart, kidneys, lungs, and immune system. The Minamata case was one of very high industrial waste discharge over a long period with several routes of exposure accounting for the extreme health concern. However, it has been demonstrated that high levels of methylmercury in the bloodstream of unborn babies and young children may harm the developing nervous system, making the child less able to think and learn. It is well known that pregnant women, infants, and children are most susceptible to the effects of mercury exposure. Exposure to methylmercury in the womb resulting from a mother's ingestion of contaminated fish and shellfish can affect the brain and nervous system of a growing baby, which can lead to impaired cognitive function, memory, attention, language, and fine motor and spatial skills. Symptoms of methylmercury poisoning can include impairment of

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<sup>171</sup> See EPA. 2001. Water Quality Criterion for the Protection of Human Health: Methylmercury, Final. EPA-823-R-01-001 January 2001. Available at: [http://water.epa.gov/scitech/swguidance/standards/criteria/health/upload/2009\\_01\\_15\\_criteria\\_methylmercury\\_mercury-criterion.pdf](http://water.epa.gov/scitech/swguidance/standards/criteria/health/upload/2009_01_15_criteria_methylmercury_mercury-criterion.pdf)

<sup>172</sup> See Dvonch, J.T., J.R. Graney, G.J. Keeler, and R.K. Stevens. 1999. Use of elemental tracers to source apportion mercury in south Florida precipitation. *Environ. Sci. Technol.* 33: 4522-4527; and see also Wang, Q., D. Kim, D.D. Dionysiou, G.A. Sorial, and D. Timberlake. 2004. Sources and remediation for mercury contamination in aquatic systems – a literature review. *Environmental Pollution* 131: 323-336.

<sup>173</sup> Peakall, D.B. and R. J. Lovett. 1972. Mercury: its occurrence and effects in the ecosystem. *Bioscience* 22: 20-25.

<sup>174</sup> Harada, M. 1995. Minamata disease: methyl mercury poisoning in Japan caused by environmental pollution. *Crit Rev Toxicol.* 25(1): 1-24.

peripheral vision, disturbances in sensations, lack of coordination in movement, and impairment of speech, hearing, walking, and muscle weakness. At high levels of exposure, elemental mercury can cause various effects on the kidneys, respiratory effects, and death. High exposure to inorganic mercury can cause gastrointestinal, nervous system, and kidney damage. Symptoms of inorganic mercury exposure include skin rashes/dermatitis, mood swings, memory loss, mental disturbances, and muscle weakness.<sup>175</sup>

Mercury enters surface waters as methylmercury, elemental mercury, or inorganic mercury, where it can exist in dissolved or particulate forms, which can undergo various transformations. The rate of transformation is determined by the balance of forward and reverse reactions related to local water characteristics. Methylmercury typically originates from bacterial reduction of inorganic mercury in sediment, often accompanied by low oxygen or anaerobic conditions. That is, the principal source of methylmercury is concentrated in fish. Recycling of methylmercury from sediment can last for decades after the principal source to a water body has ceased.<sup>176</sup> Mercury can also be present in surface waters in dissolved form, concentrated in the surface microlayer, attached to seston (organisms and non-living matter swimming or floating in a water body), in the bottom sediments, and in resident biota. In general, methylmercury is the most bioavailable and toxic form although it typically makes up less than 20 percent of total mercury within the water column.<sup>177</sup> In terms of availability in sediment, various factors including organic carbon and sulfur content can influence mercury bioavailability.<sup>178</sup> The form of mercury within a particular waterbody determines its bioavailability. Again, methylmercury, converted from other forms by bacteria in sediment and recycled to the overlying water available for uptake, is the most toxic form. Other forms of dissolved mercury are also available for uptake by aquatic plants, fish, and invertebrates. Mercury that concentrates in

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<sup>175</sup> EPA (U.S. Environmental Protection Agency). 2014b. Mercury: Basic Information. Accessed on 6/23/14 at: <http://www.epa.gov/mercury/about.html>.

<sup>176</sup> Håkanson, L. 1975. Mercury in Lake Vänern- present status and prognosis. Swedish Environ. Prot. Bd., NLU, Report No. 80, 121 pp.

<sup>177</sup> See Kudo, A., H. Nagase, and Y. Ose. 1982. Proportion of methylmercury to the total amount of mercury in river waters in Canada and Japan. *Water Res.* 16: 1011-1015; Parks, J.W., A. Lutz, and J.A. Sutton. 1989. Water column methylmercury in the Wabigoon/English River-Lake system: Factors controlling concentrations, speciation, and net production. *Can. J. Fish. Aquat. Sci.* 46: 2184-2202.; Bloom, N.S. and S.W. Effler. 1990. Seasonal variability in the mercury speciation of Onondaga Lake (New York). *Water Air Soil Pollut.* 53: 251-265; Watras, C.J., K.A. Morrison, J. Host, and N.S. Bloom. 1995. Concentration of mercury species in relationship to other site-specific factors in the surface waters of northern Wisconsin lakes. *Limnol. Oceanogr.* 40: 556-565.

<sup>178</sup> Tremblay, A., M. Lucotte, and D. Rowan. 1995. Different factors related to mercury concentration in sediments and zooplankton of 73 Canadian lakes. *Water Air Soil Pollut.* 80: 961-970.

the surface microlayer is available to organisms that live or feed on the surface (e.g., neuston). Mercury attached to seston can be ingested by aquatic animals that feed on plankton and mercury accumulated in sediments may be available to benthic plants and animals. Aquatic plants may take up mercury from air, water, or sediments.<sup>179</sup> In locations with mercury-contaminated sediments, levels of mercury in aquatic macrophytes have been measured at 0.01 micrograms per gram ( $\mu\text{g/g}$ ), indicating strong accumulation from sediments.<sup>180</sup> The primary route of exposure of mercury to aquatic animals is from direct contact with mercury-contaminated sediments and water and ingestion of mercury-contaminated food. Fish can absorb mercury through the gills, skin, and gastrointestinal tract.<sup>181</sup> Contaminated fish then become a mercury source for piscivorous birds and mammals. Emergent aquatic insects represent another potential source of mercury to insectivorous birds and mammals.<sup>182</sup> Mercury tends to occur at higher concentrations at higher trophic levels in aquatic systems e.g., top predators), due to its bioaccumulating potential, mostly through recycling of methylmercury from sediments.

## **2. Water quality standards development should not be delayed due to implementation considerations.**

In implementing the Clean Water Act for all parameters, whether conventional or non-conventional, states inevitably face difficulties. For example, in Washington, the state generally lacks an active program to control thermal loading due to degraded riparian habitat. Nonetheless, temperature standards were updated (after partial disapproval), primarily because new science and mapping clearly demonstrated that existing standards

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<sup>179</sup> Crowder, A. 1991. Acidification, metals and macrophytes. *Environ. Pollut.* 71: 171-203; Ribeyre, R. and A. Boudou. 1994. Experimental study of inorganic and methylmercury bioaccumulation of four species of freshwater rooted macrophytes from water and sediment contamination sources. *Ecotoxicol. Environ. Safety* 28: 270-286.

<sup>180</sup> See Wells, J.R., P.B. Kaufman, and J.D. Jones. 1980. Heavy metal contents in some macrophytes from Saginaw Bay (Lake Huron, USA). *Aquat. Bot.* 9: 185-193; see also Crowder, A.A., W. Dushenko, and J. Grieg. 1988. Metal contamination of wetland food chains in the Bay of Quinte, Ontario. *Environment Ontario*, Nov. 28-29, 1988. Toronto, Canada, pp. 133-153.

<sup>181</sup> Wiener, J.G. and D.J. Spry. 1996. Toxicological significance of mercury in freshwater fish. In: *Environmental Contaminants in Wildlife: Interpreting Tissue Concentrations*. W.N. Beyer, G.H. Heinz and A.W. Redman- Norwood (Eds.), Special Publication of the Society of Environmental Toxicology and Chemistry, Lewis Publishers, Boca Raton, FL, USA. pp. 297-339.

<sup>182</sup> Saouter, E., L. Hare, P.G.C. Campbell, A. Boudou, and F. Ribeyre. 1993. Mercury accumulation in the burrowing mayfly (*Hexagenia rigida*) (ephemeroptera) exposed to CH HgCl or HgCl in water and sediment. *Water Res.* 27: 1041-1048; see also Dukerscheijn, J.T., J.G. Wiener, R.G. Rada, and M.T. Steingraeber. 1992. Cadmium and mercury in emergent mayflies (*Hexagenia bilineata*) from the upper Mississippi River. *Arch. Environ. Contam. Toxicol.* 23: 109-116.

were not based on best available science, or protective of the designated uses.<sup>183</sup> However, lack of programmatic implementation of nonpoint source control is not a justification for avoidance of development of pollution limits (water quality standards).<sup>184</sup>

The Ninth Circuit's discussion regarding the implementation of § 303(d) is both analogous to the issue at hand and informative. The *Pronsolino* court explained at length that the CWA required implementation, and therefore presumably development, of water quality standards to control "whatever the source of any pollution." The Ninth circuit explained that "one of the purposes of water quality standards therefore - and not surprisingly - is to provide federally approved goals to be achieved both by state controls and by federal strategies other than point-source technology based limits."<sup>185</sup> In further discussing section 303(d), the court noted that CWA regulations applied "whether a water body receives pollution from points sources only, non-point sources only, or a combination of the two."<sup>186</sup> Since water quality standard implementation, including the adaptive management of water quality standards by establishing TMDLs, applies to all waters regardless of the relative influence of either point or nonpoint sources, it is therefore only logical that water quality standard development also applies to all relevant waterbodies regardless of their sources of pollution.

EPA, in their history of Water Quality Standards further explains the importance of standards to the application of CWA programs other than point source regulation under section 402.

Water quality standards are essential to a wide range of surface water activities, including: (1) setting and revising water quality goals for watersheds and/or individual water bodies, (2) monitoring water quality to provide information upon which water quality based decisions will be made, (3) calculating total

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<sup>183</sup>See Letter from Mike Gearhead, director of office of water and watersheds to David Peeler, Ecology Water Quality Program Manager, re: Partial Disapproval of the 2003 Revisions to the Washington Water Quality Standards Regulations, March 22, 2006.

<sup>184</sup> In Ecology's Key Decision Overview Document, it is argued in the context of Relative Source Contribution, Bioaccumulation Factors, and Methylmercury that the CWA lacks jurisdiction over nonpoint sources and therefore Ecology does not have a duty to use HHC equation variables or update standards that would address nonpoint sources. However, nothing in the CWA provides that section 303, 319 and 401 application of water quality standards should be limited due to the nature of the sources that contribute to pollutant loading.

<sup>185</sup> *Pronsolino v Nastri*, 291 F.3d 1123 (9<sup>th</sup> Cir. 2002)

<sup>186</sup> *id*

maximum daily loads (TMDLs), waste load allocations (WLAs) for point sources of pollution, and load allocations (LAs) for non point sources of pollution, (4) issuing water quality certifications for activities that may affect water quality and that require a federal license or permit, (5) developing water quality management plans which prescribe the regulatory, construction, and management activities necessary to meet the water body goals, (6) calculating NPDES water quality-based effluent limitations for point sources, in the absence of TMDLs, WLAs, LAs, and/or water quality management plans; (7) preparing various reports and lists that document the condition of the State's or Tribe's water quality, and (8) developing, revising, and implementing an effective section 319 management plan which outlines the State's or Tribe's control strategy for non point sources of pollution.

In an October 2011 press release regarding the development of human health criteria, the then Ecology Director agreed with this position and exclaimed that revised water quality standards were a foundational element of toxic pollution control.

Ensuring that the state's environmental standards accurately reflect our citizens' exposure is the next step needed to reduce toxics in our environment and protect public health for Washington's fish and shellfish consumers.<sup>187</sup>

In sum, we see no justifiable basis for delaying water quality standard development for Mercury due to the nature of the pollution loading or the difficulty of resolving it.

### **3. EPA guidance requires states to update their mercury standards, and use local fish consumption data in doing so.**

According to EPA, Ecology is required to update Mercury standards through the course of the triennial review process. Given that the current HHC proposal is a product of the triennial review process, it seems only appropriate that Ecology would also undertake development of the Mercury standard required by the EPA. In EPA's 2010 guidance EPA stated:

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<sup>187</sup> Ecology News Release, *Ecology starts dialogue about reducing toxic chemicals in fish to better protect public health*, October 11, 2011, 11-Draft.

*At this time [i.e. 2010], about seven states, plus Washington D.C. and two territories have adopted a fish tissue criterion for methylmercury with EPA approval. EPA expects that with the publication of this guidance, states and authorized tribes will include new or revised criteria for methylmercury in their waters as part of the next three year review of standards required by section 303(c) of the Clean Water Act.<sup>188</sup>*

In discussing the relationship between EPA's methylmercury criteria and their 2000 AWQC guidance for HHC, EPA explained that the states were still obligated to utilize local fish consumption data, and therefore should not just adopt EPA recommended numeric methyl mercury criteria whole cloth.

*EPA encourages States and authorized Tribes to develop and adopt water quality criteria to reflect local and regional conditions...However, when establishing a numeric value based on a section 304(a) water quality criterion modified to reflect site-specific conditions, or water quality criteria based on other scientifically defensible methods, EPA strongly cautions States and authorized Tribes not to selectively apply data in order to ensure water quality criteria less stringent than EPA's section 304(a) water quality criteria. Such an approach would inaccurately characterize risk.<sup>189</sup>*

*For exposure assessment, States and authorized Tribes are encouraged to use local studies on human fish and shellfish consumption that better reflect local intake patterns and choices.<sup>190</sup>*

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<sup>188</sup> EPA 2010 at 17

<sup>189</sup> 66 FR1347 emphasis added

<sup>190</sup> 66 FR 1346

Following EPAs 304(a) recommendations, with the exception of Relative Source Contribution, Oregon adopted methyl mercury criteria.<sup>191</sup> The criterion utilizes, as EPA requires, local fish consumption data.<sup>192</sup>

**4. Ecology already uses fish tissue as a basis for 303(d) listings, which demonstrates the feasibility of developing and implementing a tissue-based standard.**

Utilizing a fish-tissue based standard is not entirely foreign to Ecology. For many years the department of Ecology has used a fish tissue standard as the basis for listing many bioaccumulative toxics on the 303(d) list of impaired waters.<sup>193</sup> Although, this approach is somewhat out of date in that it relies upon Bioconcentration Factors as opposed to Bioaccumulation Factors and utilizes criteria that do not incorporate accurate FCRs,<sup>194</sup> it does demonstrate the feasibility of implementing such a standard. First, it shows Ecology's comfort with calculating and correlating fish tissue data with impacts to the designated uses. And second, it demonstrates Ecology's willingness to utilize the standard in a regulatory context. The tribes support this approach, and Ecology should continue to do so using updated methylmercury criteria. To develop a HHC standard on tissue and implement through the NPDES program, Ecology need only run their existing listing process in reverse, i.e. translating a tissue based standard into a numeric water column-based standard. In other words, Ecology is already tackling some of the difficult implementation issue associated with tissue-based standards, such as translation. This is a scientifically sound and vetted approach. Ecology's argument that tissue-based standards create uncertainty and therefore warrant delay, is both contrary to their own existing policies, and generally unavailing.

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<sup>191</sup> EPA. 2011. Technical Support Document for EPA's Action on Oregon's New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011 October 17, 2011. At page 33. Available at <http://www.epa.gov/region10/pdf/water/or-tds-hhwqs-2011.pdf>

<sup>192</sup> Id.

<sup>193</sup> See Ecology. 2012. Water Quality Program Policy 1-11. at page 50. Available at <http://www.ecy.wa.gov/programs/wq/303d/WQpolicy1-11ch1.pdf>

<sup>194</sup> Id.

### C. Polychlorinated Biphenyls (PCBs)

#### *Ecology Must Update PCB Criteria In Order To Better Protect Human Health, By Incorporating Revised Human Health Criteria Variables Into Criteria Calculation*

Ecology has proposed to retain the 1992 NTR criterion of 0.00017 µg/L for total PCBs in the proposed amendments to the state's water quality standards. The proposed criterion for PCBs is the only use of the so-called anti-backsliding provision that has carried over from the state's 2015 proposal into the 2016 rule. Ecology provides no rationale for the proposal regarding PCBs in the 2016 Decisions document, except to state that, "Ecology proposes to use a state-specific risk level exclusively for PCBs. These calculated values are higher than the current NTR values, and because PCBs are a chemical of concern in Washington, Ecology is making a chemical-specific decision not to increase the criteria concentrations above current criteria levels."

Ecology apparently calculates PCBs as a non-carcinogen only, without justification, then back-calculates the potential cancer risk level at  $4 \times 10^{-5}$ . Although it does not meet their own selection of a cancer risk level of  $10^{-6}$ , they consider this risk level to be good enough, since it is, "consistent with the level of risk/hazard in the toxicity factor used by the WDOH in developing fish advisories," and because it, "is more protective than the maximum risk recommended in EPA guidance."<sup>195</sup> In other words, Ecology is using a threshold of fish health advisories and maximum risk as the level of protection for this chemical.

The approach of determining that a criterion is not adequately protective, but then address this lack of protection by taking no further action, is confusing, contrary, and defaults to the criteria defined in the 1999 revisions to the National Toxics Rule (NTR), which utilizes an inaccurate FCR and underestimates exposure.<sup>196</sup> Tribal fishery and cultural resources have been and continue to be greatly impacted by this bioaccumulative carcinogen and tribes cannot support Ecology's proposal to implement a status quo standard, which is based on several outmoded HHC variables as discussed in these comments.

PCBs are bioaccumulative carcinogens, which directly threaten tribal treaty-reserved resources and the tribal members that are economically, nutritionally, culturally and spiritually sustained by them. Washington's standards should be updated for PCBs using variables more accurately reflecting exposure, consistent with EPA 304(a) guidance, and affording better protection of designated uses and human health, i.e. a 1 in  $10^{-6}$  cancer risk level and full consideration of

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<sup>195</sup> Ecology 2016 Decisions document, p 54.

<sup>196</sup> See Section II.



relevant bioaccumulation factors. Ecology needs to fully consider the health impacts of this bioaccumulative carcinogen and take the steps necessary to provide protection and build a safer future. Setting stronger regulations will drive technological innovation in the direction of removing this contaminant from Washington's waters to improve protection of the health of future generations.

**1. PCBs are responsible for ubiquitous fish consumption advisories and impaired waters listings in Washington.**

The Washington State Department of Health (DOH) has called PCBs and methylmercury "the main contaminants of concern in Puget Sound Fish."<sup>197</sup> Since 1999, DOH has issued fish consumption advisories because of PCBs<sup>198</sup> for the Lower Columbia River, the Middle Columbia River, Bradford Island, the Upper Columbia River, Lake Roosevelt, the Duwamish River, Green Lake, Lake Washington, the Okanogan River, Puget Sound, the Spokane River, the Walla Walla River, the Wenatchee River, and the Yakima River. The extent of these advisories and the consumption restrictions are included in the electronic attachments.<sup>199</sup> In addition to prompting multiple fish consumption advisories, PCBs are a pollutant in many of the state's impaired waters. EPA's Water Quality Assessment and Total Maximum Daily Loads Information database<sup>200</sup> shows Washington has listed the following miles and acres of water bodies as impaired because of PCBs.<sup>201</sup>

Specific State Causes of Impairment that make up the Washington Polychlorinated Biphenyls (PCBs) Cause of Impairment Group			
Cause of Impairment	Description of this table		
	Size of Assessed Waters with Listed Causes of Impairment		
	Rivers and Streams (Miles)	Lakes, Reservoirs, and Ponds (Acres)	Ocean and Near Coastal (Square Miles)
Polychlorinated Biphenyls (PCBs)	34.0	76,036.0	16.1

<sup>197</sup> See DOH fish consumption advisory webpage at <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories/PugetSound>

<sup>198</sup> <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories>

<sup>199</sup> Derived from <http://fishadvisoryonline.epa.gov/Advisories.aspx>

<sup>200</sup> <http://www.epa.gov/waters/ir/index.html>

<sup>201</sup>

[http://ofmpub.epa.gov/tmdl\\_waters10/attains\\_state.cause\\_detail?p\\_state=WA&p\\_state\\_name=Washington&p\\_cycle=2008&p\\_cause\\_group\\_name=POLYCHLORINATED%20BIPHENYLS%20%28PCBS%29](http://ofmpub.epa.gov/tmdl_waters10/attains_state.cause_detail?p_state=WA&p_state_name=Washington&p_cycle=2008&p_cause_group_name=POLYCHLORINATED%20BIPHENYLS%20%28PCBS%29)

It is clear from the number and extent of Washington's fish consumption advisories and impaired waters that continued reliance on 15 year old standards is not working to keep tribal resources safe for human consumption. More protective water quality standards for PCBs coupled with rigorous implementation of the standards should be part of Washington's efforts to protect the health of its citizens.

## **2. Health Effects of PCBs**

In Ecology's 2015 and 2016 documents titled, "Overview of Key Decisions in Rule Amendment", Ecology appears to downplay the impact of PCBs on human health. The first statement in Ecology's discussion on the health effects of PCBs is that "Health effects that have been associated with exposure to PCBs include acne-like skin conditions in adults and neurobehavioral and immunological changes in children. PCBs have been shown to cause cancer in animals (EPA 2014)<sup>202</sup>". The discussion of Ecology's key decision on the health impact of PCBs is misleading and incomplete. PCBs are now recognized as endocrine disruptors in humans and exhibit synergistic toxicity with some dioxins and PBDEs,<sup>203</sup> which magnifies health impacts even at low levels of exposure. Existing body burdens of dioxin will also compound PCB's' health impacts.<sup>204</sup> In addition, PCBs are classified as Group 1 human carcinogens according to the International Agency for Research on Cancer (IARC).<sup>205</sup> EPA's 2014 PCB fact sheet report acknowledges that that by using a weight-of-evidence approach research studies now "provide conclusive evidence that PCBs cause cancer" in animals and "the data strongly suggests that PCBs are probable human carcinogens". The National Toxicology Program, in their Thirteenth Report on Carcinogens, further supports EPA's position.<sup>206</sup>

In addition to carcinogenic effects, PCBs have been specifically identified in studies of American Indian communities as potential endocrine disrupters. A study by the Institute of Health and the Environment at the University of Albany found that PCBs in native foods (fish

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<sup>202</sup> EPA, 2014. U.S. Environmental Protection Agency. Hazardous Waste PCBs Fact Sheet. Available online at: <http://www.epa.gov/solidwaste/hazard/tsd/pcbs/about.htm>

<sup>203</sup> Pellacani, C., et. al., 2012, Synergistic interactions between PBDEs and PCBs in human neuroblastoma cells., *Environ. Toxicol.* 2012 Mar 20. Doi: 10.1002/tox. 21768.

<sup>204</sup> Uemura, H., et. al., 2009, Prevalence of metabolic syndrome associated with body burden levels of dioxin compounds among Japan's general population, *Environmental Health Perspectives*, Vol. 117, No. 5,

<sup>205</sup> See International Agency for Research on Cancer, IARC, Monographs on the Evaluation of Carcinogenic Risks to Humans, available at <http://monographs.iarc.fr/ENG/Classification/>

<sup>206</sup> See Substances Listed in the Thirteenth Report on Carcinogens, [http://ntp.niehs.nih.gov/ntp/roc/content/listed\\_substances\\_508.pdf](http://ntp.niehs.nih.gov/ntp/roc/content/listed_substances_508.pdf)

consumed from the St. Lawrence River) were clearly correlated with lower testosterone levels of Mohawk men.<sup>207</sup>

Exposure to PCBs also presents elevated risks to breast-feeding infants. Oregon DEQ, working with toxicologists from EPA Region 10 and the Oregon Health Authority, analyzed the breast-feeding exposure pathway associated with Superfund sites, and stated that, “Our main conclusion is that PCB risks to breastfeeding infants will be 25 times the risk to the mother, assuming long term exposure to the mother.”<sup>208</sup> Ecology’s decision document fails to account for the elevated risk from the breast-feeding exposure pathway.

Tribes and the general public need to know that Ecology has first and foremost fully considered the most recent evidence of the human carcinogenic and endocrine disrupting impacts of PCBs when making key decisions on setting human health-based criteria. It is not sufficient to default to the status quo, when *stronger* measures are needed to protect the health of tribal members and all Washington citizens that consume fish from Washington waters.

### 3. Analytic methods for the detection of PCBs

Ecology has recommended EPA standard method 608 for PCBs with a quantitation limit of 0.5 µg/L that is more than three orders of magnitude higher than the proposed standard of 0.00017 µg/L. In September 2010, EPA proposed to add EPA Method 1668C “Chlorinated Biphenyl Congeners in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS” to 40 CFR Part 136<sup>209</sup>. The method is a significant improvement in sensitivity. The reporting limits for congeners in aqueous samples using HRGC/HRMS are 0.0001- 0.0004 µg/L. The State of Oregon recommends<sup>210</sup> that certain facilities use EPA method 1668C to monitor for PCB congeners and gives permit writers discretion in selecting the method for compliance monitoring. Ecology should no longer recommend method 608 as a quantitation limit. Washington should recognize that analytical techniques for PCBs have evolved beyond

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<sup>207</sup> Schell, LM, MV Gallo, GD Deane, KR Nelder, AP DeCaprio, A Jacobs, Akwesasne Task Force on the Environment. Relationships of polychlorinated biphenyls and dichlorodiphenyldichloroethylene (p,p'-DDE) with testosterone levels in adolescent males. Environmental Health Perspectives. 2013. DOI:10.1289/ehp.1205984. <http://ehp.niehs.nih.gov/1205984/>

<sup>208</sup> Poulsen, Mike. Toxicologist for the Oregon DEQ. April 6, 2016 email and associated reference materials, including Oregon DEQ 2010 Risk Assessment Guidance, <http://www.deq.state.or.us/lq/cu/health.htm>

<sup>209</sup> <http://www.gpo.gov/fdsys/pkg/FR-2010-09-23/pdf/2010-20018.pdf>

<sup>210</sup> ODEQ, 2014. Oregon Department of Environmental Quality. Memo: Implementation Instructions for Polychlorinated Biphenyls (PCBs) Water Quality Criteria (CAS #: 1336363). November 28, 2014.

method 608 and the state should require their use as part of a comprehensive effort to limit the release of PCBs into the environment.

#### **4. Bioconcentration Factor vs Bioaccumulation Factor**

PCBs tend to bioconcentrate in organisms at low trophic levels, and through the gills of fish that filter large amounts of water. However, PCBs also bioaccumulate in predatory organisms as the body burden of prey is transferred to the predator, including humans.<sup>211</sup> A prerequisite for a substance's strong bioaccumulation factor is an affinity for fat and persistence in the environment, both of which typify PCBs. Therefore, bioaccumulation factors support the best representation of exposure, and should be utilized when developing criteria for persistent, bioaccumulative, toxic pollutants with high bioaccumulation tendencies such as PCBs. Ecology has little scientific evidence to support their decision that using BCFs for PCB uptake is most reflective of the exposure pathway for PCBs. BAFs have been widely used in the scientific community for the past 35 years to most accurately describe the net increase of PCBs in predator species.<sup>212 213</sup> Ecology characterizes the choice of using a BCF or a BAF as a risk management decision; tribes disagree with this approach and indicate that the BAF method should be used for determining the impact of PCBs on human health, based on sound scientific principles.

#### **5. Origination from Non-point Sources is not justification for inaction on PCB criterion**

Some source assessments have shown that a significant portion of PCB loading may originate from non-point sources.<sup>214</sup> This fact does not alleviate the need to take action to reduce or eliminate as much PCB as possible from municipal and industrial point sources that sequester these pollutants, and provide key interception points to implement removal technologies. Source assessment studies have also shown that concentrations of PCBs in surface waters increase as water flows downstream and become impacted by human activities. To the maximum extent possible, regulations should limit the obvious impacts of human activities on water quality.

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<sup>211</sup> Alexander, D., 1999, Bioaccumulation, bioconcentration, biomagnification. Environmental Geology, Encyclopedia of Earth Science, pp 43-44.

<sup>212</sup> Borga, K. et. al, 2005, Bioaccumulation factors for PCBs revisited. Environmental Science and Technology, Vol. 39, No. 12, pp. 4523-4532.

<sup>213</sup> See also section VI

<sup>214</sup> Washington Department of Ecology, Spokane River PCB Source Assessment, June 5-6, 2012 Workshop presentation.

## D. Dioxins

### Ecology Must Recalculate Dioxin Criteria and Apply Best Available Science

Although the EPA has determined 2,3,7,8-Tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) and other dioxin-like compounds to be carcinogenic to humans, Ecology has elected in its draft rule to calculate human health criteria for 2,3,7,8-TCDD based only its non-cancer health effects, resulting in a less protective criterion for this highly toxic chemical than the existing NTR. As rationale for this change, Ecology cites “recent scientific information and uncertainty surrounding assessment of carcinogenicity”, and the fact that the toxicity factors for dioxin have “been under review for many years”.<sup>215</sup> While the EPA has not formally updated the cancer slope factor for dioxins, it has published a draft cancer slope factor which is more than five times higher than the previously published value, which would result in more stringent, not less stringent, criteria.<sup>216</sup>

By treating TCDD as a non-carcinogen, the criteria do not account for the additive carcinogenic effects of other dioxin-like compounds. In its 2002 compilation of national recommended water quality criteria, EPA included the following guidance:

*The section 304(a) water quality criteria for dioxin contained in this compilation is expressed in terms of 2,3,7,8-Tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) and should be used in conjunction with the national/international convention of toxicity equivalence factors (TEF/TEQs) to account for the additive effects of other dioxin-like compounds (dioxins).*

By applying the TEF/TEQ approach, “the other highly toxic dioxins will be properly taken into account”.<sup>217</sup> This approach is also consistent with the treatment of dioxin mixtures in the state’s Model Toxics Control Act (“MTCA”; WAC 173-340).

It is the State’s policy in other environmental regulatory programs, including MTCA and the Sediment Management Standards (SMS), to rely on other sources of information if toxicity

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<sup>215</sup> Washington Department of Ecology (Ecology). 2016 Key Decisions document. ECY publication no. 16-10-006.

<sup>216</sup> Rice, Glenn. 2010. *The U.S. EPA’s Draft Oral Slope Factor (OSF) for 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)*. USEPA National Center for Environmental Assessment, Office of Research and Development. Science Advisory Board Dioxin Review Panel Meeting, Washington, DC. October 27.

<sup>217</sup> EPA 2002. National Recommended Water Quality Criteria:

parameters are not available through EPA's Integrated Risk Information System (IRIS). The SMS state that "if the value for a toxicological parameter is not available through IRIS, other sources shall be used" (WAC 173-204-561), and MTCA states that "If a carcinogenic potency factor is not available from the IRIS data base, a carcinogenic potency factor from HEAST or, if more appropriate, from the NCEA shall be used" (WAC 173-340-708). The cancer slope factor for TCDD, which is no longer available through the IRIS database, is available through the Health Effects Assessment Summary Tables (HEAST), and should be used for calculating criteria until a new value is published.

The result of the approach proposed by Ecology is draft human health criteria for dioxins that are among the least protective in the country. The criteria are 2.5 times less protective than the existing national recommended criteria, and 25 times less protective than those adopted by the State of Oregon.

## **E. Federally Required Protection of Downstream Uses**

- 1. Washington's proposed water quality standards fail to demonstrate protection of downstream standards, including the tribes' and Oregon's, as required by federal regulations.**

Pursuant to the CWA and its implementing federal regulation, states are required to demonstrate that new or revised water quality standards do not cause or contribute to violations of downstream standards. Federal regulations state:

*In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.*<sup>218</sup>

EPA explains that the preferred path for states to comply with 40 CFR 131.10(b) is to develop water quality standards that are consistent with those downstream.<sup>219</sup>

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<sup>218</sup> 40 CFR 131.10(b)

<sup>219</sup> See EPA .2014. Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions. EPA-820-F-14-001. Available at <http://water.epa.gov/scitech/swguidance/standards/library/upload/downstream-faqs.pdf>

EPA further explains the importance of developing consistency between standards:

*Designated uses and water quality criteria that ensure attainment and maintenance of downstream WQS are important because they may help to avoid situations where downstream segments become impaired due, either in part or exclusively, to individual or multiple pollution sources located in upstream segments. Designated uses and water quality criteria that provide for the attainment and maintenance of downstream WQS may help support more equitable use of any assimilative capacity available to upstream and downstream pollution sources and/or jurisdictions and may facilitate restoration of the downstream waters. Ensuring the attainment and maintenance of downstream WQS during development of upstream designated uses and water quality criteria may also help limit and/or avoid resource-intensive water quality problems and/or legal challenges that can occur after adoption of uses and criteria that lack consideration of downstream waters' WQS. Furthermore, downstream protection consideration prevents the shifting of responsibility for pollution reductions from upstream sources and/or jurisdictions to downstream sources and/or jurisdictions.*<sup>220</sup>

Unfortunately, not all of Washington's proposed HHC meet these requirements, because they establish standards for shared intra-state/tribal waters (e.g. Oregon, Spokane Tribe) whose current water quality standards for many parameters are more protective than Washington's proposal.<sup>221</sup> This has the effect, as EPA notes in the quote above, of shifting the burden unto the tribes to regulate the inadequacies of upstream standards.<sup>222</sup> This issue is exacerbated by the fact that many tribes' jurisdictional boundaries lie at the mouths of streams, and therefore are downstream of most dischargers.

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<sup>220</sup> Id at page 2

<sup>221</sup> See Ecology's document titled Washington Proposed HHC vs. Oregon Adopted HHC, available at <http://www.ecy.wa.gov/programs/wq/swqs/ECYPropvsORHHC.pdf>

<sup>222</sup> Although some tribes have adopted NTR-based criteria as a default due to resource constraints, many tribes are in now in process of updating and adopting their HHC and FCRs. Therefore, the adoption of NTR based criteria for tribes is not a reason to maintain state standards, as tribal criteria will be modified in the near future.

**2. Ecology must adopt more protective numeric criteria to ensure consistency with federal regulations**

Tribes including the Spokane Tribe have adopted more protective water quality standards that have been approved by the EPA; more tribes are in various stages of receiving treatment as a state, and adopting or revising tribal water quality standards. Authorities delegated to the state under the CWA for implementation of water quality standards, currently and in the future, must protect downstream waters within tribal territorial jurisdictions, as well as treaty-reserved rights and resources.

Ecology must take measures to ensure consistency with federal regulations requiring that Washington's proposals are protective of downstream designated uses. Like EPA, the tribes' preferred approach to achieve this goal is to adopt significantly more protective criteria, as requested throughout these comments.





## IV. IMPLEMENTATION TOOLS

The Department of Ecology's proposed draft rule for variances, compliance schedules, intake credits, and narrative effluent limits creates a package of regulatory measures that authorizes non-compliance with water quality standards, and as a result fails to protect the treaty-reserved rights of tribes to harvest fish and shellfish under the protection of the federal Clean Water Act. Tribes recognize that EPA regulations authorize states and authorized tribes to adopt water quality standards variances, compliance schedules, and site-specific criteria to provide time to achieve the applicable water quality standards.<sup>223</sup> However, EPA has also stated that, in order harmonize treaty-reserved rights with the CWA, such rights must be considered when determining whether proposed water quality standards amendments adequately protect Washington's fish and shellfish harvesting designated uses.<sup>224</sup> Consideration of treaty-reserved rights must be incorporated into any proposed implementation requirements that enable dischargers to delay or avoid compliance with required standards.

Ecology has proposed "implementation tools" that could suspend protection of any of Washington's designated uses without providing sufficient requirements to assure future attainability. They also remove important requirements to attain standards within reasonable timeframes. The state's proposed implementation tools would give the state broad discretion to permit discharges that are out of compliance with water quality standards for unspecified numbers of years or decades, thereby creating permanent damage to treaty-reserved resources. Clearly, the emphasis of the proposed rule is on achieving more predictability for dischargers to continue to pollute, rather than certainty for clean water.

Although many participants in the rule-making process have noted that toxic contaminants in both point-source and non-point sources must be addressed to achieve water quality, the proposed implementation tools continue to segment such linkage, by removing requirements to prepare TMDLs prior to issuing variances, compliance schedules, and other implementation "tools."

Finally, tribes note that the proposed implementation tools apply to all water quality standards, thereby creating "off-ramps" for compliance that could impact the exercise of treaty rights, recreation, commercial fishing and shellfish cultivation, threatened aquatic resources under the federal Endangered Species Act, and human health.

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<sup>223</sup> See e.g. 80 Fed. Reg. 55063, 55066 (Sept 14, 2015)

<sup>224</sup> *ibid*

## A. Variances

1. **Variances fundamentally undermine treaty right protection and the purpose of the Clean Water Act.**
  - a. Variances have potential to cause harm to treaty-reserved rights and resources, and therefore should not be authorized in any circumstances where a treaty-reserved right and a designated use overlap.*

The Washington State Department of Ecology's newly proposed rule language authorizes a variance from both the criteria and designated uses for an individual facility, a group of facilities, or stretches of waters.<sup>225</sup> Essentially, this language provides that a variance is effectively a new, albeit time-limited, water quality standard, which changes not only the numeric criteria, but also alters the designated use. The proposed variance rules would allow Ecology broad discretion to suspend a designated use for a potentially long time period, not limited by the regulation. As such, the rules are in conflict with the goals of the Clean Water Act to protect and enhance water quality in a timely manner; and are inconsistent with state and federal obligations to not impede treaty-reserved rights.

Designated uses are the very foundation of the Clean Water Act's (CWA) regulatory structure. A designated use describes both the purpose of the CWA and level of protection afforded to a body of water. Section 101(a) of the CWA establishes some of the most important designated uses – like fishable and swimmable waters - which also concomitantly make up the statutory goals of the Act. The designated uses are also an element of water quality standards, by providing the targets that numeric or narrative criteria should be set to protect.<sup>226</sup> These standards in turn serve as metrics to ensure that other CWA programs are adequately fulfilling the CWA's objectives of restoring the nation's water, e.g. §401 certifications, §402 discharge permits, §404 dredge and fill permits, and §303(d) listing procedures and Total Maximum Daily Load development (TMDL). Therefore, a revision or suspension of the designated uses – even temporarily - effectively changes the goals of the CWA and the subsequent levels of protection implemented at a waterbody, permit or multiple permit scale.

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<sup>225</sup> Proposed language at WAC 173-201A-420(1)

<sup>226</sup> See 40 CR 131.3(i) defining water quality standards as “provisions of State or Federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act.”

As EPA acknowledges, tribal treaty rights and designated uses are inextricably linked.<sup>227</sup> In their recent publication of proposed Human Health Criteria for Washington, EPA determined that Treaty Rights “must be considered when determining which criteria are necessary to adequately protect Washington’s fish and shellfish harvesting designated uses.”<sup>228</sup> The member tribes of the Northwest Indian Fisheries Commission have treaty-reserved, constitutionally protected, and federally adjudicated rights to harvest and manage various natural resources, including salmon and shellfish, throughout their Usual and Accustomed Areas. These resources are concurrently protected under the fishable designated use throughout Washington’s waters. If Ecology were to suspend this fishable designated use and reassign a different designated use - albeit temporarily - through a variance process, they would effectively remove a key federal protection for treaty-reserved rights. In practice, the “time-limited” nature of such a proposal could translate into decades of delay, and would thus be inconsistent with EPA’s treaty-trust obligations and Washington’s duty to not to take actions that would undermine the treaties as exemplified in the recent federal district court “culvert” decision.<sup>229</sup>

According to federal law, the purpose of a water quality standard is to “enhance the quality of the water.”<sup>230</sup> Yet variances, which effectively set a *new* water quality standard, are intended to establish weaker criteria that by definition no longer protects the existing designated use. As stated earlier, this maneuver is inconsistent with the CWA’s overarching goals and statutory framework, as well as state and federal obligations to not impede treaty-reserved rights.

***b. Variances may not be legally authorized under the CWA, and therefore should only be applied under very limited circumstances***

There is no explicit reference or authorizing language for variances in the CWA. In 1977, EPA general counsel opined that, because the CWA used the terminology “*wherever attainable*, water quality standards provide for the protection and propagation of fish, shellfish, etc...” that therefore, the CWA must also provide for situations when those goals were not attainable. The same EPA Office of General Counsel legal opinion considered the practice of temporarily downgrading the WQS as it applies to a specific permittee rather than permanently

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<sup>227</sup> See 80 Fed. Reg. 55063, 55066 (Sept 14, 2015)

<sup>228</sup> *Id.*

<sup>229</sup> *United States v. Washington*, 20 F.Supp.3d,889 Subproceedings No 01-1 (Culverts)(W.D. Wash 2007).

<sup>230</sup> 40 CFR 131.3(i)

downgrading an entire water body or waterbody segment(s) and determined that such a practice is acceptable as long as it is adopted consistent with the substantive requirements for permanently downgrading a designated use. EPA further explains that:

a state may change the standard *in a more targeted* way than a designated use change, so long as the state is able to show that achieving the standard is “unattainable” for the term of the variance.<sup>231</sup>

To this day, this legal theory is the underpinning of variance programs, and lends itself to two important observations. First, variance programs are supposed to be distinguished from a use downgrade in that they temporarily change standards in a more targeted way. Second, the entire premise of a variance is based on EPA interpretation of two words: “wherever attainable.”

Absent express authorization under the CWA, the legality of variances is suspect, and application of the program should be reconsidered, or at a minimum should be applied in extremely limited circumstances. Under the canons of statutory construction, any such provision of law that would authorize a contravention of the very goals and objectives of the act – in this case allowing dischargers to violate existing water quality standards and setting standards not in protection of the designated uses - should be firmly grounded in explicit statutory direction. Currently, the CWA’s statutory language provides no such explicit authorization.

***c. Retention of “underlying uses” is a legal fiction, which in practice will have no bearing on water quality protection when a new time-limited water quality standard that is less protective gets adopted as a variance. Therefore, Ecology’s contention that a variance will actively drive water quality improvements in the longer term is not supported by the regulatory structure, since a variance will perpetuate a less protective standard.***

Ecology states that, “By issuing a variance instead of a use change, the underlying use and criteria are preserved.”<sup>232</sup> Temporary relief from compliance with existing water quality standards is a benefit to NDPES permittees who will be allowed to discharge pollutants above

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<sup>231</sup> EPA. 2013. Discharger-specific Variances on a Broader Scale: Developing Credible Rationales for Variances that Apply to Multiple Dischargers, EPA-820-F-13-012. Available at <http://water.epa.gov/scitech/swguidance/standards/upload/Discharger-specific-Variances-on-a-Broader-Scale-Developing-Credible-Rationales-for-Variances-that-Apply-to-Multiple-Dischargers-Frequently-Asked-Questions.pdf>

<sup>232</sup> Washington Department of Ecology, 2016 Decisions Document. P 79.

levels legally allowed under the CWA. No such benefit exists for the designated uses, during the term of the variance--potentially for decades. However, removing the existing water quality standards, including the designated uses and attendant criteria, for waterbodies or permits provides no-real protection for aquatic life, which the CWA is designed to protect. Ecology's rules purport to retain the "underlying use" consistent with new federal regulations governing the same issue. However, retention of a use that no longer has associated criteria set to protect it is merely a legal fiction. The fact of the matter is that a variance eliminates the designated use and the criteria of the waterbody or permit, and therefore establishes a new water quality standard.

The argument that the conceptual retention of underlying uses somehow provides more protection for water quality is not supported in reality. A variance does not allow underlying uses to be "maintained" --they are *replaced with the allowance of a variance*, with the hope that the original designated uses can be restored after potentially decades of implementing a less protective water quality standard, based on a less protective designated use. Implementation of a less protective water quality standard is not a pathway to reduce toxic chemicals in fish and human consumers, but instead a slow erosion of water quality protection, and a convenient legal shield for dischargers of harmful pollutants that are unable or unwilling to comply with water quality standards. It is therefore is no great comfort that somehow a variance, i.e. a lesser, substandard water quality standard, can support improved protection of aquatic life or human health.

***d. Variances, although "time-limited," will have permanent effects on all of the designated uses, including the status of aquatic resources, and the tribes' ability to harvest and consume fish and shellfish.***

Fish populations have currently reached all time lows, leaving little to no allowances for both treaty and non-treaty harvest.<sup>233</sup> Concurrently, it is documented that designated use habitat, i.e. salmon habitat, continues to decline.<sup>234</sup> Many of these same species of salmon are

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<sup>233</sup> See Pacific Fishery Management Council (2016) Preseason Report I: Stock Abundance Analysis and Environmental Assessment Part 1 for 2016 Ocean Salmon Fishery Regulations; Regulation Identifier Number 0648-BF56 (*Published February 2016*), available at <http://www.pcouncil.org/salmon/stock-assessment-and-fishery-evaluation-safe-documents/preseason-reports/2016-preseason-report-i/>

see also Pacific Fishery Management Council (2016) Review of 2015 Ocean Salmon Fisheries Stock Assessment and Fishery Evaluation Document for the Pacific Coast Salmon Fishery Management Plan (*Published February 2016*). Available at [http://www.pcouncil.org/wp-content/uploads/2016/02/Review\\_of\\_2015\\_Salmon\\_Fisheries\\_FullDocument.pdf](http://www.pcouncil.org/wp-content/uploads/2016/02/Review_of_2015_Salmon_Fisheries_FullDocument.pdf)

currently listed as threatened under the federal Endangered Species Act. Given the particular fragility of these designated uses, variances are likely to have long-term impacts on the resource. Recent studies on water quality impacts to coho salmon demonstrate that there are fairly immediate effects of stormwater pollution resulting in pre-spawn mortalities.<sup>235</sup> Several years, let alone several decades, of discharges can result in a downward spiral of adverse effects to the salmon lifecycle in a given watershed or near-shore areas. Therefore, although regulations purport to be time-limited, the reality is that authorized pollution discharges above existing standards necessary to protect the designated use, could result in permanent extirpation of treaty-reserved resources. Thus, while regulations hold out hope that a water quality standard will be restored, the species they are designed to protect may not.

## **2. Variances, if authorized should only be applied under very limited circumstances.**

Although the application of variances under the Clean Water Act may not be legally plausible, variances will likely be deployed as an “implementation tool” by the Department of Ecology. As such the following comments are provided to encourage careful and limited application of this rule. Under no circumstances should a variance be applied where it temporarily removes or replaces a designated use that is concomitantly a treaty-reserved right.

### ***a. No variance should be authorized prior to the development of a TMDL***

The proposed rules authorize a variance prior to conducting a TMDL. Instead the rules require “water quality data and analysis to characterize receiving and discharge water pollutant concentrations.”<sup>236</sup> This approach circumvents the regulatory framework of the federal Clean Water Act, by allowing the department to ignore the requirements of §303(d) to list polluted waters and subsequently develop a TMDL to set pollutant limits. Ecology’s proposed rules allow the department to replace the existing water quality standards, without first trying to clean up the water through the predesigned CWA regulatory framework – namely development and implementation of a TMDL. The federal district court has recently provided the Department of Ecology direction on the matter of whether Ecology can and should pursue alternative measures in lieu of TMDLs when water bodies are listed as impaired:

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<sup>235</sup> Spromberg, J. A., Baldwin, D. H., Damm, S. E., McIntyre, J. K., Huff, M., Sloan, C. A., Anulacion, B. F., Davis, J. W., Scholz, N. L. (2016), Coho salmon spawner mortality in western US urban watersheds: bioinfiltration prevents lethal storm water impacts. *Journal of Applied Ecology*, 53: 398–407. doi: 10.1111/1365-2664.12534

<sup>236</sup> Proposed rules at WAC 173-201A-420(3)(d) &(f)

States may pursue reasonable courses to reducing pollution in addition to establishing TMDLs. *See, e.g., City of Arcadia v. U.S. EPA*, 411 F.3d 1103, 1106 (9th Cir. 2005) (“states remain at the front line of combatting pollution”). *However, nothing in the CWA provides that states may pursue these courses in place of, or as a means of indefinitely delaying, a TMDL [sic]*. To the contrary, the CWA expressly requires states to produce a TMDL for each pollutant of concern in each 303(d) water segment.<sup>237</sup>

Given both the direction of the courts and the clear statutory language of the CWA requiring TMDLs for impaired waters<sup>238</sup> it seems prudent that Ecology first attempt to restore waters, before changing water quality standards to relieve dischargers of their CWA compliance burdens.

***b. Variances that are authorized for excessive periods of time will not be time-limited, because they may have permanent and lasting impacts.***

Variances that are allowed to be open ended, whether by process of continual renewal or failure to set a date of expiration, do not fall within the limited EPA interpretation of the CWA to be a time-limited and targeted change in the criteria for the term of the variance. Moreover, variances with durations that extend for generations in length (e.g. 20, 30, or 40 years) are not temporary, because they set in place a less stringent standard of protection for such an excessive length of time that they are likely to permanently impact human health and natural resources. Also, discharging at levels known to violate water quality standards for extensive periods of time is likely to impact designated uses to such an degree that the long term effects on the use may in fact be permanent. This is counter to the intent of variances, i.e., variances are intended to prevent permanent downgrade in use, not effectively encourage a permanent downgrade.

***c. The definition of a variance should limit the duration – include requirement for expiration and limit duration between 3 and 10 years.***

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<sup>237</sup> *Sierra Club v EPA*, Case No. 11-CV-1759-BJR (W.D. Wash 2015)

<sup>238</sup> 33 U.S.C. § 1313(d)

Proposed variance regulations should require explicit time limits, and the duration of any given variance should be limited between three and ten years.<sup>239</sup> Ecology's proposed rule language denotes variances as "time-limited," consistent with new federal regulations on the subject, but provides no such direction as to the length of time that constitutes a reasonable time limit. Therefore, it is recommended that definitional language or subsequent eligibility criteria include explicit limitations on the duration and require an expiration date, as opposed to providing the "time period for which the variance is applicable."<sup>240</sup>

***d. Variances should not apply for purposes of implementing section 303(d) of the Clean Water Act.***

According to recent EPA guidance, variances are only intended to apply to section 401 water quality certifications and 402 NPDES permits of the CWA. As discussed above, since a variance is intended to preserve the underlying designated use, CWA programs such as 303(d) listing should still be based on the underlying use, and not the interim criteria, i.e., the variance. EPA has clearly stated, "any implementation of CWA section 303(d) to list impaired waters must continue to be based on the designated uses and criteria for the waterbody rather than the interim requirements."<sup>241</sup> EPA proposed regulations on variances further underscore that variances should not apply for purposes of TMDL development or 303(d) listing.

The interim requirements specified in the WQS variance are in effect during the term of the WQS variance and apply for CWA section 402 permitting purposes and in issuing certifications under section 401 of the Act for the permittee(s), pollutant(s), and/or water body or waterbody segment(s) covered by the WQS variance.<sup>242</sup>

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<sup>239</sup> EPA. 2013. Supplemental Information for Water Quality Standards Regulatory Clarifications Proposed Rule. EPA 820-F-13-027, at sec 131.14(b)(iii) available at [http://water.epa.gov/lawsregs/lawsguidance/wqs\\_index.cfm#proposed](http://water.epa.gov/lawsregs/lawsguidance/wqs_index.cfm#proposed)

<sup>240</sup> Proposed Rules at WAC 173-201A-420 6(a)

<sup>241</sup> EPA. 2013. *supra*

<sup>242</sup> EPA. 2013. Supplemental Information for Water Quality Standards Regulatory Clarifications Proposed Rule. EPA 820-F-13-027, at sec 131.14(a)2(ii) available at [http://water.epa.gov/lawsregs/lawsguidance/wqs\\_index.cfm#proposed](http://water.epa.gov/lawsregs/lawsguidance/wqs_index.cfm#proposed)



Therefore, Ecology rules should clearly state that variances do not apply to section 303 programs such as the impaired waters listings and TMDLs.<sup>243</sup> This is consistent with our comments above regarding TMDLs, in that TMDLs should precede a variance, not come after or during. Ecology should include language in their proposed rules to clarify the appropriate sequence of CWA implementation.

***e. Variances, if applicable at all, must only apply to individual dischargers.***

To be consistent with EPA guidance to preserve the underlying uses, Ecology should seek to minimize the impacts associated with a time-limited water quality standard change, by not alleviating the burden of protecting the designated uses for both point and nonpoint sources. The only conceivable way to avoid far reaching impacts on natural resources from variances is to limit the scope of the variance to individual dischargers, consistent with EPA's earlier guidance on the subject. In this manner, variances will only apply to a WQBEL for a specific parameter, and need not temporarily change the entire designated use that applies to the waterbody. This simple and straightforward approach will allow Ecology to avoid setting the stage for legal conflicts – such as developing new, lesser protective standards in hopes of preserving the underlying designated uses – which will eventually only add to confusion for the both the discharger and the public.

***f. Ecology should include additional variance requirements to ensure that variances do not violate other state and federal regulations or impair treaty rights***

Ecology's proposed rules for variances, if pursued despite the objections contained herein, should include a section detailing limitations on eligibility, to avoid potential conflict of laws or situations where subsequent variance approvals will harm resources. Eligibility requirements are also a simple way to communicate to variance applicants that there are other statutory and common law considerations that Ecology and EPA must consider. It also clearly establishes further limitations to avoid conflict of laws.

Most importantly, regulations should clarify that no variance will be authorized that impairs or impedes a treaty reserved right.

The following are suggestions for eligibility requirements that other states have also applied to their variance requirements:

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<sup>243</sup> EPA. 2013. Discharger-specific Variances on a Broader Scale: Developing Credible Rationales for Variances that Apply to Multiple Dischargers, EPA-820-F-13-012. Available at <http://water.epa.gov/scitech/swguidance/standards/upload/Discharger-specific-Variances-on-a-Broader-Scale-Developing-Credible-Rationales-for-Variances-that-Apply-to-Multiple-Dischargers-Frequently-Asked-Questions.pdf>

- Variances may not jeopardize ESA-listed species or critical habitat
- Variances may not impair or impede treaty-reserved rights and resources.
- Variances may not result in unreasonable risk to human health or environment
- Variances may not impair an existing use
- Variances must comply with antidegradation requirements
- Variances may not impair downstream waters including those within tribal jurisdiction

***g. Proposed variance rules should continue to require that notice of a variance application and all subsequent actions are given to tribes. Such notification should be provided to those affected not just those tribes that Washington State determines to have “jurisdiction.” Tribes should be given notice about all subsequent administrative actions related to variances, not just applications***

Early notification and consultation with tribes regarding application of a variance is important and should be maintained. The current provision in the proposed rules requires notice to tribes and states with “jurisdiction” that is either downstream or adjacent to the proposed variance.<sup>244</sup> While the tribes construe their co-management status and treaty-reserved rights as providing the necessary “jurisdiction,” the proposed language leaves such a jurisdictional determination up to the discretion of the department. The treaty tribes of Washington have constitutionally protected, federally adjudicated, treaty-reserved rights to natural resources, which traverse most waters in western Washington. As such many tribes could be impacted by a variance regardless of the location of their reservation or trust (fee) lands. To avoid complications and disputes regarding what is and is not jurisdictional, we recommend that notice requirements be sent to “all affected tribes.”

Tribes should also be provided notice about all subsequent actions related to variances including reevaluations, etc.

***h. Variances that address nonpoint sources must include an enforceable mechanism to ensure compliance with water quality standards***

Ecology’s proposed rules provide for documentation of the BMPs for nonpoint sources that meet the requirements of RCW 90.48. However, Washington currently lacks approved BMPs and an adequate program to ensure their implementation consistent with the requirements of WAC 173-201A-510, and other state and federal obligations.

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<sup>244</sup> Proposed rules at WAC 173-201A-420(5)

In order to ensure that a variance structured to make progress as intended, it must contain enforceable limits. To the extent the BMPs are required as a limit for nonpoint sources, those limits need to be accompanied by clear-cut enforceable mechanisms and a demonstration of how the selected BMPs will achieve compliance with water quality standards and the requirements of RCW 90.48. Without enforceable mechanisms, BMPs, variances, and ultimately water quality standard compliance will have no accountability for being achieved within the time frame allotted. Ecology should further expand upon how BMPs for unpermitted dischargers will take effect, be designed to meet water quality standards, and ultimately enforced. Absent clear assurances that BMPs for non-permitted sources will be both implemented and adequately enforced, no such variance should be authorized.

- i. Per federal regulations, variance “renewals” should not be authorized separately from a new variance application and review process. Interim reviews of multi-discharger variances should be subject to public process and evaluated on the entirety of the impacts and cumulative effects of the programmatic proposal. Reevaluations of variances must be subject to EPA review, and a variance should be terminated if reevaluation does not occur.***

EPA regulations governing variance provisions do not provide for renewal. Instead federal regulations provide that a state may adopt a “subsequent WQS variance consistent with this section.”<sup>245</sup> This, however, suggests that a complete variance application must be submitted, again, consistent with the requirements of 40 CFR 131.14, including EPA review and approval. There is no provision that would allow EPA to approve or for Ecology to authorize a variance renewal as Ecology provides for in proposed WAC 173-201A-420(1)(e). Variance renewal sets the stage for continual perpetuation of a variance and administrative extension, which is counter to the definition of a variance in that they are supposed to be “time-limited.” Moreover, a renewal has the ability to circumvent public process, EPA and tribal review, and consideration of current information on treatment and water quality data. To avoid potential conflicts with federal regulations, “renewals” should not be authorized.

Additionally, Washington’s proposed variances interim reviews do not adequately address public process for variances that apply to multiple dischargers. 40 CFR 131.14(b)(1)(v) provides that variances exceeding five years must include a provision for how “the state intends to obtain public input on the reevaluation.” Yet Ecology’s proposed rules limit public process on variance reevaluation to individual permits during the permit cycle and water body variances.<sup>246</sup> There is no provision in the proposed regulations to evaluate the cumulative impacts and the

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<sup>245</sup> 40 CFR 131.14(b)(1)(iv)

<sup>246</sup> see WAC 173-201A-420(8)(b)

entirety of the effects from a multi-discharger variance and open such a review to public input, except in the context of individual permit renewals. This approach segments the reevaluation of a potentially broad and far-ranging variance. If variances are evaluated only on the individual permit scale, then they should only be authorized on the individual permit scale. Federal regulations requiring review of variances were intended to be additive to existing public process and review opportunities. If EPA thought the NPDES permit cycle was an adequate mechanism to review variances, then they would have expressly recommended such. Instead, EPA provided for additional review of variances. Dischargers should not be afforded the convenience of applying for a broad exemption, while not being held accountable to the review of the impacts at both the individual and multi-discharger scale. Therefore, the variance in its entirety should be reviewed subject to public input, on a separate schedule; while individualized impacts are again considered during the NPDES permit cycle.

Additionally, federal regulations state that the results of such reevaluation must be submitted to EPA within 30 days of completion,<sup>247</sup> but Washington's proposed regulations make no mention of submission of reevaluations to EPA. To provide consistent messaging to potential applicants, proposed rules should clarify that EPA must review reevaluations.

Finally, proposed rules should include federal requirements that a variance is no longer the applicable water quality standard "if the State does not conduct a reevaluation consistent with the frequency specified in the WQS variance or the results are not submitted to EPA."<sup>248</sup>

***j. Variances should include requirements for dedicated monitoring and funding to implement it***

In order to ensure enforceability, engage adaptive management, and observe progress, variances will need to require extensive water quality, effectiveness, and implementation monitoring. In the case of toxics, such monitoring can be expensive, and therefore is likely to go unimplemented due to cost. Moreover, existing state ambient monitoring is not comprehensive enough to ensure adequate oversight is maintained. Therefore, variance requirements need to establish mandatory monitoring and assurances of funding as a means to guarantee ongoing observation of progress. Without such monitoring data, enforcement and adaptive management will be impossible, rendering the variance ineffective, and allow failure of its ultimate objectives – attainment of standards in the time allotted.

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<sup>247</sup> 40 CFR 131.14(b)(1)(v)

<sup>248</sup> 40 CFR 131.14(b)(1)(vi)

## B. Compliance Schedules

*Proposed Compliance Schedule Rules Are Overbroad, And Afford Ecology Too Much Discretion In Delaying Permit Compliance With Water Quality Standards. Rule Language Should Be Further Refined To Limit The Duration And Application.*

### 1. *Proposed regulations need to provide guidance on time limits.*

According to federal regulations, compliance schedules must require compliance “as soon as possible, but not later than the applicable statutory deadline under the CWA.”<sup>249</sup> The CWA sets many deadlines for the reduction and elimination of discharges, many of which have already passed.<sup>250</sup> For example, the CWA set a goal that all discharges to navigable waters be eliminated by 1987.<sup>251</sup> The CWA also sets requirements that technological limits and secondary treatment were established by 1977.<sup>252</sup> While the goal to eliminate harmful discharges by 1987 was admittedly optimistic, nothing in the act establishes that NPDES permit compliance with water quality standards can be suspended indefinitely or provides that states should have unlimited discretion in delaying compliance longer than a five year NPDES permit cycle. Existing Washington State regulations set compliance schedule limits at 10 years. Recent state legislation extended those limitations, but only under limited circumstances. EPA has yet to review and approve the state’s proposed extension for compliance schedules, whether legislated or proposed via rule.

Ecology’s proposed regulations allow for potentially lengthy periods of noncompliance with state water quality standards, as they do not specify time limits. Longer timelines are problematic for several reasons. The longer the time line for compliance, the more difficult it will be for staff - both inside and outside of Ecology – to track progress. The longer the time line, the more likely administration changes will occur, resulting in a lack of policy and staff

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<sup>249</sup> See CFR 122.47(2)(a)

<sup>250</sup> See 33 USC sec 1251(a)(1); See also 33 USC sec 1311(b)(1)(A),(B) and (C), 1311(b)(2)(C),(D) and (E), 1311(b)(3), 1311

<sup>251</sup> sec 1251(a)(1)

<sup>252</sup> See sec 1311(b)(1)

continuity. Longer timelines also make it more likely that permits will be neglected, resulting in less immediate oversight and accountability. And the longer the timeline, the greater the likelihood that damages to treaty-reserved resources could occur, because essentially water quality standard noncompliance is authorized, allowing dischargers to pollute at levels known to be problematic to the protection of designated (also treaty-reserved) uses.

For these reasons, the CWA established permit reissuances on relatively short, five-year cycles. The CWA also intended to usher in pollution controls in rather short order, as evidenced by the numerous deadlines seeking permit compliance decades ago. Long duration compliance schedules could undermine these CWA goals, objectives, and mandates; by allowing permittees to effectively suspend NPDES permit compliance for numerous undefined consecutive years.

Although, EPA does not expressly state the limitations of the “timeframe allowed,” everything in the CWA points to the fact that such schedules should be, at a minimum, attuned to compliance with the CWA, which generally speaking, establishes administration of NPDES permits on a maximum of five year cycles.

## **2. Compliance schedules should require interim numeric effluent limits in conjunction with narrative limits, when such limits are applicable.**

The CWA requires, among other things, that compliance schedules establish clearly enforceable limits. The CWA defines compliance schedules as follows:

The term "schedule of compliance" means a schedule of remedial measures including an *enforceable* sequence of actions or operations leading to compliance with an effluent limitation, other limitation, prohibition, or standard.

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For a compliance schedule to be enforceable, it must have clear benchmarks for determining progress; otherwise, attainment with interim limits cannot be assessed, and compliance can only be determined at the expiration of the schedule. If compliance can only be determined upon expiration (meeting a final effluent limit or standard), and compliance is ultimately not achieved, then a discharger could effectively receive “safe harbor” for the entire period of the schedule. This would serve to indemnify dischargers from CWA liability, despite the fact that dischargers are not achieving compliance with standards. To avoid this situation, compliance schedules should utilize numeric interim effluent limits, because they are a simple and transparent way to assess the discharger’s progress during the period necessary to achieve

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<sup>253</sup> 33 USC sec 1362(17)

compliance. Although there are instances that narrative limits are necessary to set deadlines for construction and other actions, such limits must also be combined with numeric limits for the aforementioned reasons to ensure enforceability.

**3. Ecology's proposed regulations should further define the limited circumstances when a compliance schedule applies.**

According to EPA, compliance schedules should only be developed “when the designated use is attainable, but the discharger needs additional time to modify or upgrade treatment facilities in order to meet its WQBEL.”<sup>254</sup> However, Ecology's proposed authorizing language is vague regarding a compliance schedule's precise application, which could lead to overuse of this tool, allowing the agency or dischargers to circumvent the application of more rigorous, but legally appropriate pathways. To prevent compliance tool overuse, Ecology should clearly distinguish when a compliance schedule versus a variance versus a Use Attainability (UAA) Analysis is applicable. These distinctions will help tribes (and the public) better understand when, and what tools are most likely to apply. Furthermore, better definition of scope will ensure that the entire array of implementation tools (variances, compliance schedules, UAA, permit denial) are not overlapping or allowed to be doubled-up, which could result in a severe relaxing of water quality regulation and a lack of water quality protections for treaty-reserved resources. For example, a compliance schedule should not be authorized for the purpose of meeting the limits established by a variance.

**4. *Compliance schedules should not be authorized for purposes of “conducting studies.”***

Ecology is proposing that compliance schedules can be applied for the purposes of allowing noncompliance with quality standards for the period of time needed to “complete water quality studies related to implementation of permit requirements to meet effluent limits.”<sup>255</sup> EPA has stated that compliance schedules are not appropriate for such measures. For example, EPA has explained that compliance schedules are not available for the sole purposes of developing

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<sup>254</sup> See EPA. 2014. Water Quality Standards Handbook, available at <http://water.epa.gov/scitech/swguidance/standards/handbook/chapter05.cfm#section53>

<sup>255</sup> Proposed standards at WA-173-201A-510(4)(a)(iv) available at <http://www.ecy.wa.gov/laws-rules/wac173201a/p1203.pdf>

either TMDLs or UAAs.<sup>256</sup> Therefore, it is logical that if compliance schedules are inappropriate for developing studies leading to waste load allocations and their subsequent effluent limitations (i.e. TMDLs), then compliance schedules are not appropriate for developing other “studies” which would contain less accountability mechanisms than a TMDL, but presumably used for the similar purpose of developing effluent limits. Allowing for “studies” to delay attainment of water quality standards sets the stage for circumvention of the CWA, because dischargers could take years to conduct research, while avoiding more specific concrete measures that might otherwise achieve compliance or at the very least progress toward clean water. Tribes do not suggest that research or other studies should be avoided – to contrary, the tribes would encourage Ecology and dischargers to undertake the necessary research and studies to advance treatment. However, compliance with standards need not be suspended to complete this work.

**5. *Ecology should require a transparent demonstration on the record that compliance schedules will achieve attainment with standards in the time allotted.***

To ensure that compliance schedules are justified, and consistent with federal and state regulations, Ecology must include a requirement in the proposed rules that all schedules are accompanied by a demonstration that compliance schedules will lead to attainment of water quality standards in the time allotted. Such a justification must be made available to the public. This recommendation is consistent with EPA requirements, where EPA has stated:

In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record, that the compliance schedule "will lead to compliance with an effluent limitation ... " "to meet water quality standards" by the end of the compliance schedule as required by sections 301(b)(1)(C) and 502(17) of the CWA. *See also* 40 C.F.R. §§ 122.2, 122.44(d)(1)(vii)(A)<sup>257</sup>

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<sup>256</sup> EPA. 2007. Memorandum from James A. Hanlon, Director of the EPA Office of Water to Alexi Strauss, Director of Water Division EPA Region 9, re: compliance schedules for water quality based effluent limitations in NPDES permits, May 10, 2007 at 10 and 11.

<sup>257</sup> EPA. 2007. *supra*



**6. *The rule amendment extends the time limit for compliance schedules beyond ten years without consideration of the circumstances prescribed by RCW 90.48.605, and is therefore not authorized by state law.***

RCW 90.48.605 directs the department to amend the state's water quality standards to allow compliance schedules in excess of ten years. While these extensions may not necessarily be in compliance with federal law CWA (see above), they do establish a very limited state law basis for extending schedules beyond the preexisting ten-year limit. The state law establishes a four-part test for when compliance schedules can exceed ten years.

Compliance schedules for the permits may exceed ten years if the department determines that:

- (1) The permittee is meeting its requirements under the total maximum daily load as soon as possible;
- (2) The actions proposed in the compliance schedule are sufficient to achieve water quality standards as soon as possible;
- (3) A compliance schedule is appropriate; and
- (4) The permittee is not able to meet its waste load allocation solely by controlling and treating its own effluent.<sup>258</sup>

Nothing in RCW 90.48.605 authorizes the department to develop compliance schedules outside the bounds of these limitations. However, the proposed rules establish that compliance schedules can be developed for a duration in excess of ten years without meeting the criteria above. For example, the proposed rules authorize compliance schedules in excess of ten years, without the development of a TMDL, and regardless of whether a permittee is able to achieve compliance by solely treating its own effluent. The above state law was intended to provide additional flexibility for only those limited situations where both point and nonpoint source reductions were simultaneously necessary to achieve compliance with standards, and therefore additional time would be necessary. This approach provided for enhanced flexibility under situations where point and nonpoint source pollutant load reductions were clearly prescribed, as established through a TMDL, and it was evident that nonpoint source controls would be necessary to ultimately bring both the permit and water body into compliance. Presumably, this approach would take more time, given Washington's struggle to successfully control

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<sup>258</sup> RCW 90.48.605

nonpoint sources of pollution. However, the proposed rules ignore the legislature's statutory design that provided only limited flexibility for these special circumstances, and instead provides authorization for extended compliance schedules without the required accountability. Ecology must require that TMDL development and subsequent EPA approval is complete and limit extensions to those situations where both point and nonpoint source reductions are a necessary component of permit compliance.

#### ***7. Proposed rules create a disincentive to complete approvable TMDLs***

The proposed rules set two different legal standards for when and how long a compliance schedule can be authorized, which creates a disincentive to finalize TMDLs. This is problematic because Ecology has allowed the delay of TMDL completion in several cases, resulting in relaxed NPDES discharger liability, including most recently the Spokane River for PCBs and in South Puget Sound for Dissolved Oxygen. These delays have put off triggering the CWA's established process for setting more stringent WQBELs for NPDES permittees.

The structure of Ecology's compliance schedules rules will further avoid the CWA required TMDL development for impaired waters in several ways. First, Ecology provides no limitations on a compliance schedule if a TMDL is not in place, and in fact expressly notes the eligibility of compliance schedules for the purpose of conducting "studies." This allows a discharger to remain in noncompliance, while Ecology studies the problem for potentially decades and also avoids establishing the additional permit and water body limitations to bring waters back into compliance. (Note that the federal court recently held that EPA acted in an arbitrary and capricious manner for approving such an approach in Spokane). In contrast, the adoption of a TMDL would trigger additional requirements under Ecology's proposed rules, limiting the application of a compliance schedule to those circumstances where nonpoint source reductions were necessary for a permittee to meet its own waste load allocation. Creating more stringent requirements for compliance schedules when TMDLs apply, which already include an additional level of accountability for NPDES dischargers, but not doing so when a TMDL does not apply, encourages NPDES dischargers to further avoid TMDL development. Ecology should not effectively create incentives that reward TMDL avoidance. Instead, Ecology should use regulatory incentives as a means to accomplish CWA process (not avoid it), such as applying enhanced flexibility of compliance schedules only under the limited circumstances contemplated by the legislature - when a TMDL was completed and approved, and nonpoint source reductions were a necessary component of meeting WLA.

## C. Intake Credits

**THE USE AND APPLICATION OF INTAKE CREDITS SHOULD BE FURTHER REFINED AND NARROWED TO ENSURE THAT CREDITS ARE ONLY APPLIED TO CIRCUMSTANCES THAT WILL NOT CAUSE OR CONTRIBUTE TO VIOLATIONS OF WATER QUALITY STANDARDS OR IN ANY WAY INCREASE THE POLLUTANT LEVEL OF DOWNSTREAM TRIBAL WATERS OR DOWNSTREAM WATER RESOURCES OF AFFECTED TRIBES**

**1. *To avoid potential violations of water quality standards, intake credits should be limited to the following circumstances:***

- a. The facility does not add the intake pollutant of concern if it is a toxic parameter
- b. The facility does not alter the intake pollutant chemically or physically
- c. When intake of the pollutant of concern comes from the same *surface* body of water from the immediate vicinity of the discharge.
- d. When the intake credit is used to demonstrate *compliance with* effluent limitations, as opposed to avoiding the setting of effluent limitations through the Reasonable Potential Analysis review.
- e. Prohibits the use of mixing zones for demonstrating compliance with requirements and water quality standards.
- f. Prohibit any increase in pollutant concentration to avoid anti-degradation violations

**2. *Further refinement of the definition and criteria applicable to intake credits is needed.***

The proposed definition for intake credits is overbroad in that it allows the application of intake credits to the development of both technology based effluent limits (TBEL), water quality based effluent limits (WQBEL) and Reasonable Potential Analysis (RPA). It also does not adequately define what bodies of water intake and subsequent discharge can come from. Therefore, further refinement of the definition and subsequent criteria are recommended as follows.

**a. *Definitions and subsequent regulations should prohibit use of intake credits in the RPA.***

Federal regulations provide that intake credits should only apply to TBELs.<sup>259</sup> Therefore, intake credits should not apply to the RPA, because they should generally not be used as procedure to avoid triggering effluent limitations, but instead used solely as a means to demonstrate

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<sup>259</sup> 40 CFR 122.45(g)

compliance with end of pipe standards under very limited circumstances. If intake credits are allowed for the RPA, then they could be used to circumvent the development WQBEL, and therefore avoid permit limits that would otherwise help control the discharge of pollutants or at a minimum transparently document that facilities are potential contributors. For example, the RPA should carefully consider and document whether a facility was also adding the pollutant of concern to a water body, in addition to that which was in the intake. If the facility is discharging the pollutant of concern, that discharge should be publically documented through the assignment of an effluent limitation. Documentation of an effluent limitation is a transparent way of establishing that the facility also introduces and subsequently discharges the pollutant of concern. Moreover, establishing effluent limitations is an important part of adaptively managing pollutant loading in a watershed through subsequent efforts such as TMDLs. When pollutant loading from NPDES permits is not documented in an effluent limitation, facilities may be overlooked in the TMDL process. For example, a facility's role in overall pollution reduction could be overlooked in a TMDL analysis, if they were not clearly documented as a facility generating a pollutant of concern. This could then result in a facility failing to reduce overall loading on par with the rest of the watershed's allocations.

***b. Prohibition of credits for intake pollutants partially or entirely due to human activity should be maintained***

As mentioned above, ground water withdrawal and subsequent discharge presents significant opportunity to alter receiving water quality. Under no circumstances should intake credits authorize the acceleration of pollutant migration. We strongly support this provision.

***c. Deletions and clarifications are recommended to further refine application of intake credits and prevent violation of the Clean Water Act.***

1) Clarify 460(1)(d). This section proposes the following:

*(d) Where intake water for a facility is provided by a municipal water supply system and the supplier provides treatment of the raw water that removes an intake water pollutant, the concentration of the intake water pollutant will be determined at the point where the water enters the water supplier's distribution system.*

It is not clear from the language whether a credit is allowed before or after treatment from a drinking water facility. The language should clarify that credits will not be provided for pollutants present in the water prior to treatment. If this provision were to be construed to the contrary, it could provide a pollution allowance for a pollutant that is not actually present in the "intake" of the discharger, because it was removed in the prior drinking water treatment.

Intake credits must only be allowed for pollutants that merely pass through a facility without either an addition or alternation of the physical and chemical proprieties of the pollutant.

2) Delete section 460(1)(e)

Ecology proposes to allow the use of intake credits when intake water is mixed with other sources of intake water, including those not from the same body of water as defined in 460(1)(e). The rule provides that the department “may derive an effluent limit reflecting the flow-weighted amount of each source of the pollutant.” This section potentially allows intake credits to apply to intake waters other than those that are from the “same body of water,” and therefore is inconsistent with the general provision provided in section 1 that prohibits intake credits applied to waters that are not hydrologically connected (see also issues regarding this provision above). Although Ecology proposes the use of flow-weighting as means to attempt to account for only those pollutants from the same water body, the reality is that these calculations can only provide rudimentary estimations of pollution intake, especially when considering the complexity of accounting for toxics which are often present at low concentrations and are difficult to detect. Also, it is unlikely that flow-weighted calculations will capture the changes in intake flow over the course of the five-year permit cycle, or seasonal/yearly variations in the pollutant concentrations. The result is that it is likely, if not certain, that co-mingling of waters and pollutants are likely to occur, which will not easily be accounted for. This introduces potential for discharge of unpermitted pollutants (from other waters), which are inconsistent with the act and federal regulations.<sup>260</sup> Moreover, the added complexity is likely to obfuscate the crediting process, making it more difficult for the public to track the use of the credits. Ultimately, the provision makes the development of WQBEL more complex, makes the use of intake credits less transparent and more difficult for the public or permit reviewers to understand, and introduces more opportunity for mathematical error or inaccurate representations of pollutant loading, which may lead to unpermitted discharges in violation of the Act.

3) Delete mixing zone allowance in 460(2)(a)(iv)

Ecology should not allow a NPDES permit to factor in additional dilution through use of a mixing zone to demonstrate no net addition of mass through an intake credit. To do so allows for potential net increase of pollutant at the point of discharge and allows intake credits to be used as a means to potentially increase loading.

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<sup>260</sup> See sect 1311; see also 40 CFR 122.44 and 122.45

- 4) Delete allowance to increase pollutant concentration in discharge unless it violates applicable water quality standard in 460(2)(a)(iv) – this is a direct violation of anti-degradation requirements.

Ecology must remove the language, “unless the increased concentration does not cause or contribute to an excursion above an applicable water quality standard.” This language authorizes the use of intake credits to discharge pollutants in excess of the receiving water’s existing water quality in situations where existing water quality is of a higher quality than the standards. Ecology’s anti-degradation requirements prohibit degrading higher quality waters to the level of water quality standards unless a tier II analysis is conducted and such action is determined to be the “overriding public interest.” The relevant provisions of law provide:

- (1) Whenever a water quality constituent is of a higher quality than a criterion designated for that water under this chapter, new or expanded actions within the categories identified in subsection (2) of this section that are expected to cause a measurable change in the quality of the water (see subsection (3) of this section) may not be allowed unless the department determines that the lowering of water quality is necessary and in the overriding public interest (see subsection (4) of this section).<sup>261</sup>

***d. TMDLs development must be required prior to allowing intake credits for discharges into 303(d) listed waters.***

When receiving waters are polluted, it is important that extra scrutiny is applied to facilitate cleanup, and provide accountability that NPDES permits are not contributing to the problem. Under the CWA, TMDL development is the process by which this occurs.

Permit tools which provide dischargers with relief from CWA compliance should not apply under circumstances when receiving waters are polluted and in need of clean up, i.e., they are listed as category five on the 303(d) list of impaired waters and TMDL development is necessary. Tools such as intake credits should be limited in these circumstances, because they may authorize dischargers to perpetuate status quo conditions. Specifically, the situation to avoid is when the pollutant causing impairment is the same pollutant authorized for an intake credit, and the intake credit is used as a basis for avoiding effluent limitations. Under such

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<sup>261</sup> WAC 173-320(1)

circumstances when a discharger has the pollutant of concern in their intake, the discharger should be included in the CWA required analysis and assigned loading reductions via development of a TMDL, waste load allocations, and eventually new WQBELs. Otherwise, intake credits can be used as a means to escape the necessary CWA required watershed adaptive management. Before assigning new permit limits using intake credits, Ecology should undertake the CWA TMDL process. Using this approach, Ecology will have a better informational foundation by which to judge whether an intake credit will ultimately impact downstream designated uses or cause or contribute to a violation of water quality standards.

In sum, intake credits should not be allowed for pollutants that are also listed as impairing the receiving waters (as demonstrated on the 303(d) list of impaired waters), until after a TMDL is conducted, and the appropriate waste load allocations have been assigned and translated into effluent limitations.

***e. Documenting, reporting, and transparency requirements should be included when intake credits are applied***

To ensure that intake credits are applied in a transparent manner, proposed regulations should include requirements that NPDES permits clearly indicate:

- The application of an intake credit to development of a effluent limit
- The application of an intake credit in an RPA, which otherwise would have resulted in an effluent limit
- The pollutant parameter(s) to which the credits are applied
- The basis for the determination

Additionally, all calculations and justifications for credits should be included as part of the NPDES permits record, and should be easily accessible to the public.

## D. Combined Sewer Overflow Treatment Plant Regulations

1. ***Proposed use of narrative effluent limits as the primary means for compliance for CSO should be eliminated, because it does not provide assurance of effective treatment, and may contravene both state and federal regulations.***

Proposed regulations should not limit, emphasize, or otherwise dictate that effluent limits for CSO treatment plants should be “primarily” narrative as opposed to numeric. CSO treatment, like any other permit, must comply with water quality standards and protect the designated uses. Both numeric and narrative limits will likely be necessary to achieve these goals when implementation of human health criteria is at issue, and accountability for compliance needs to be assured. Moreover, Ecology cannot contravene EPA’s CSO policy, nor Washington’s CSO regulations, requiring full compliance with water quality standards and use of water quality based limits, by limiting permit requirements to narrative limits regardless of their effectiveness or accountability.

2. ***Federal legal requirements provide that water quality based effluent limits are required to show compliance with state standards (including HHC) in the second phase of CSO plan implementation unless permittees can otherwise demonstrate compliance with applicable standards.***

Combined Sewer Overflows (CSO) and the treatment for those dischargers fall squarely within the definition of a “point source”<sup>262</sup> under the federal CWA, and are therefore required to obtain a NPDES permit pursuant to section 301 and 402 of the CWA.<sup>263</sup> Further pursuant to the CWA,<sup>264</sup> CSO orders and permits must conform to EPA’s CSO policy. Section 1342(q) provides:

Each permit, order, or decree issued pursuant to this chapter after December 21, 2000, for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator on April 11, 1994.

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<sup>262</sup> 33 USC §1362(12)

<sup>263</sup> see 33 USC §§ 1311(a) & 1342

<sup>264</sup> 33 USC § 1342(q)



EPA's 1994 policy provides that "CSOs are point sources subject to NPDES permit requirements *including both technology-based and water quality-based requirements* of the CWA."<sup>265</sup> The policy further provides that "water quality based requirements are to be based upon the applicable water quality standards."<sup>266</sup>

The EPA policy also lays out the necessary elements for the second phase of CSO permitting, which occurs after the development of the long-term control plan. Those requirements include technology-based limits, narrative limits, *and* water quality-based limits.<sup>267</sup>

While these provision do allow the development of water quality based effluent limits that utilize "performance standards and requirements" designed to satisfy the requirements of the "demonstrative approach" of EPA's policy, they do not simply authorize either states or permittees to utilize narrative standards as a simple surrogate for WQBELs, without the additional accountability of establishing standards and assurances that WQS will be achieved. As an underscore to this point, EPA's guidance on the demonstrative approach provides that the use of performance standards and requirements must ensure that CSO discharges remaining after implementation of the planned control program "will not preclude the attainment of WQS or the receiving waters' designated uses or contribute to their impairment."<sup>268</sup>

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<sup>265</sup> 59 Fed. Reg. 18688, 18695 (April 14, 1994) emphasis added

<sup>266</sup> *Id.*

<sup>267</sup> 59 Fed Reg. 18696 stating - "Water quality-based effluent limits under 40 CFR 122.44(d)(I) and 122.44(k).requiring, at a minimum, compliance with, no later than the date allowed under the State's WQS the numeric performance standards for the selected CSO controls, based on average design conditions specifying at least one of the following:

- i. A maximum number of overflow events per year for specified design conditions consistent with II.C.4.a.i; or
- ii. A minimum percentage capture of combined sewage by volume for treatment under specified design conditions consistent with II.C.4.a.ii; or
- iii. A minimum removal of the mass of pollutants discharged for specified design conditions consistent with II.C.Q.a.iii; or
- iv. performance standards and requirements that are consistent with II.C.4.b. of the Policy"

<sup>268</sup> 59 Fed. Reg. 18693

**3. *State law requirements for CSO dischargers, including those from CSO treatment plants, also require compliance with WQS and protection of designated uses***

Washington State regulations for CSOs are harmonized with federal requirements in that they also require that CSO discharges do not violate water quality standards and ensure protection of designated uses. They also provide that CSOs should not violate sediment quality criteria.<sup>269</sup>

**4. *Narrative limits are less protective of water quality, and are likely to generate less water quality data to evaluate progress and compliance with federal and state requirements***

The aforementioned regulations point to the fact that CSO dischargers are legally required to assure and demonstrate compliance with water quality standards. Ecology should not limit the permit writer's tools necessary to achieve these goals, because narrative limits - especially when they don't contain numeric benchmarks (as the PCHB recently held) - are often not sufficient to demonstrate compliance. Unless dischargers are given discrete numeric limits and required to monitor discharges for those limits, it seems there is little in the way of accountability that water quality standard compliance will be assured. Additionally, it is necessary for permittees to generate water quality monitoring data for human health criteria to both assess the efficacy of treatment as well as progress to meeting overall clean up goals.

Finally, the requirement for primarily narrative limits may undermine the CWA watershed restoration and adaptive management provisions by limiting the development of WQBELs to implement a waste load allocation. Given that CSO dischargers (which are usually in highly urbanized and polluted environments) may be discharging to impaired waters, it is necessary to not restrict the CWAs restoration tools that may be needed for future clean up efforts.

**5. *Requiring narrative limits merely because of the variability of discharge sets bad precedent for NPDES permits, and is an approach unsupported by federal law.***


EPA regulations require water quality based effluent limitation regardless of the variable nature of CSO dischargers. In fact, EPA's policy goes so far as to provide direction on how to calculate effluent limits given the variability of the discharge.<sup>270</sup> Therefore, it is contrary to federal policy

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<sup>269</sup> See WAC 173-245-015(1) providing: "All CSO sites shall achieve and at least maintain the greatest reasonable reduction, and neither cause violations of applicable water quality standards, nor restrictions to the characteristic uses of the receiving water, nor accumulation of deposits which: (a) Exceed sediment criteria or standards; or (b) have an adverse biological effect."

<sup>270</sup> 59 Fed. Reg. 18696

to suggest that somehow variability is justification for avoidance of a WQBELs and the primary application of narrative effluent limits. Moreover, nothing in the state or federal clean water acts provide that permits limits should be relaxed simply because pollution occurs either variably or intermittently. To do so, would create a bad precedent that could effectively send a message to dischargers that seasonality, intermittent timing, or variability in discharges affords the permittee an opportunity for a lesser standard or an opportunity to circumvent the necessary CWA adaptive management approach of reducing discharges by upgrading overtime from TBELs to WQBELs to achieve the acts' overarching goals. With such precedent, forestry practices and other industry operations that operate cyclically or seasonally, including any industrial stormwater permittee could argue that only narrative limits should be required in permits, because their discharges too are subject to "variability." Conversely, the CWA ultimately requires compliance with water quality standards and requires the necessary means and accountability to do so, regardless of frequency of discharge. In the case of effluent limitations, the act requires both narrative and numeric limits, applied as necessary to implement water quality standards (including anti-degradation provisions) and also applicable to waste load allocations. Variability of discharge has not been, is not, and should not be a determining factor for the level of accountability applied in an NPDES permit.



## V. APPENDICES

- A. Undue Delay by the State of Washington
- B. Spreadsheet of Chemical Comparisons: NTR, EPA 2015 proposal, WA 2016 proposal, and Oregon Approved (Ridolfi Environmental, 2016), and Tally of Comparisons (NWIFC Technical Work Group)
- C. Fish Consumption Rates
- D. Additional supporting documentation (electronic files): References and Materials Cited

## A. History of Delay by Washington State for Establishing Human Health Criteria

Timeline Summary: History of HHC development in Washington.	
1991-1992	Development of NTR for Washington
1994-2000	Tribal studies of fish consumption are completed and submitted to the state. In 1999, the state convenes an interagency Risk Assessment Forum, which recommends that fish consumption rates be changed in state standards.
2002-2003	National Environmental Justice Advisory Committee report identifies the need to remedy fish consumption rates in state standards, consistent with treaty rights and environmental justice concerns. The Triennial Review of WA state surface water standards focuses on aquatic life criteria, but tribes comment on the need to establish human health criteria.
2007-2010	Tribes meet with state and EPA to discuss development of revised FCR in HHC. Formal workshops are held, and a leadership group is established by Tribes, EPA, and Ecology to track progress. Triennial Review (2010) identifies the need to establish HHC.
2011-2012	<p>Department of Ecology pauses efforts to adopt an FCR in water quality standards and shifts effort to establish fish consumption rate to Toxics Cleanup Program for amending Sediment Management standards. Ten tribes and two tribal consortiums comment on Technical Support Document related to Fish Consumption Rates.</p> <p>Ecology announces in July, 2012 that they will defer the FCR back to the water quality standards process instead. A target date of Fall 2013 is established for a draft rule for human health criteria. Tribes correspond with the state and EPA to express their frustration with the pivot.</p> <p>Investigate West later documents industry influence on the decision to delay.</p>
2013	<p>Incoming Governor Jay Inslee establishes Governor's Informal Advisory Group. Ecology Director Maia Bellon commits to completion of draft rule by the Fall/Winter of 2013/2014.</p> <p>Industry intervenes in state budget process to influence the development of an FCR.</p>
2014	Multiple delays in issuing a draft rule by the Department of Ecology. In April, EPA indicates that they will begin federal promulgation of revised HHC if the state does not complete rule by the end of 2014. In July, Governor Inslee announces direction for rule making, linked to a toxics reduction strategy to be introduced to the WA State Legislature in 2015.
2015	In January, Ecology issues draft rule for HHC and compliance tools, and legislation for increased use of chemical action plans for toxic reduction is introduced. Legislature fails to pass toxics reduction legislation. Governor directs Ecology to withdraw rule and announces intent to file new draft in 2016. EPA files proposed rule.

*Narrative History of the Delay by the State of Washington:*

1. **Washington State has unduly delayed the adoption of revised human health criteria, thereby subjecting tribal communities to continued harm from exposure to toxic chemicals.**
  - a. Early studies of tribal fish consumption rates documented that the NTR value of 6.5 grams per day grossly underestimated tribal fish consumption in Washington. Regional scientifically-defensible data for tribal fish consumption has been available since 1994 for the Columbia River Tribes<sup>271</sup>, and since 1996 for Puget Sound Tribes.<sup>272</sup> The state has acknowledged the deficiencies in state standards since at least 1999, when the WA Department of Ecology published a draft analysis and selection of fish consumption rates for risk assessments and risk-based standards.<sup>273</sup>
  - b. Triennial Reviews: Tribes have requested that the state remedy the deficiency in state standards since at least 2002, when the issue was raised during the Triennial Review of the state's water quality standards. The 2002 Triennial Review was focused on aquatic life standards, but the issue was explicitly raised again during the 2010 Triennial Review. The Department of Ecology's response to the 2010 Triennial Review included a commitment to address the inadequate fish consumption rate in state water quality standards.
  - c. Deferring the issue: Since 2010, the Department of Ecology has repeatedly switched focus on the FCR issue back and forth between the toxic cleanup and water quality divisions, thereby thwarting the timely adoption of more protective HHC. Ecology assigned the analysis of the FCR to the Toxics Cleanup Program in 2010, with the express objective of establishing a FCR that could be used in both sediment management standards and water quality standards.

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<sup>271</sup> CRITFC (Columbia River Inter-Tribal Fish Commission), 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin. Columbia River Inter-Tribal Fish Commission Report reference #94-03, Portland, Oregon.

<sup>272</sup> Toy, K.A., Polissar, N.L., Liao, S., and Mittelstaedt, G.D. 1996. A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region. Tulalip Tribes, Department of Environment.

<sup>273</sup> Washington State Department of Ecology, 1999. Draft analysis and selection of fish consumption rates for risk assessments and risk-based standards. Ecology Pub. 99-200. L. Kiell and L. Kissinger and an interagency Risk Assessment Forum.

After at least 18 months down that path, the state abandoned the effort in the Toxics Cleanup Program in July 2012, and initiated a new process by the Water Quality Program. The Governor initiated another discussion process for advisory purposes in 2013, known as the Governor’s Informal Advisory Group, which concluded in 2014.

**2. The establishment of human health criteria in state water quality standards has been inappropriately influenced by intervention from industry.**

- a. Industry has advocated for lowering one the protectiveness of one input in exchange for another. In the 2010 Triennial Review, representatives commenting for industrial dischargers remarked that the state ought to lower the protective level for the cancer risk rate if they were to raise the fish consumption rate.<sup>274</sup> At the time, the state responded that they had no plan or purpose to change the cancer risk rate. In these and other remarks posted on the Ecology blog, “What People are Saying,” industrial representatives characterized the risk rate as a policy decision—an argument that the state appears to have accepted, as the state characterizes many decisions on human health criteria as “risk management” decisions.<sup>275</sup> As other sections of these comments describe, it is the health of tribal people (and other groups that are major consumers of seafood) that are placed at disproportionate risk.
- b. Several investigative reports conducted in 2012 and 2013 concluded that particular influence was exerted by the Boeing Corporation on the Governor and her staff in 2012, immediately preceding the Department of Ecology’s decision to defer establishment of a revised fish consumption rate and remove numerical recommendations from their Technical Support Document.<sup>276,277</sup> In May and June of 2013, private corporations, in particular the Boeing Corporation, were reportedly attempting to influence state budget discussions in the Washington

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<sup>274</sup> Washington Department of Ecology; August, 2011. Washington Water Quality Standards 2010 Triennial Review – Comments and Response. <http://www.ecy.wa.gov/programs/wq/swqs/TrienRevComm.html>

<sup>275</sup> WA Dept. of Ecology; January 2015. “Overview of Key Decisions in Rule Amendment” Ecology Publication no. 14-10-058.

<sup>276</sup> McClure, Robert. March 30, 2013. Business interests trump health concerns in fish consumption fight. Investigate West.

<sup>277</sup> McClure, Robert and Olivia Henry. April 23, 2013. How Boeing, allies torpedoed state’s rules on toxic fish.

State Legislature.<sup>278</sup> The legislative discussions prompted the Environmental Protection Agency regional administrator to write the Director of the Department of Ecology to warn that, *“should Washington’s process be unnecessarily delayed, the EPA has the authority to amend the NTR human health criteria for Washington.”*<sup>279</sup>

**3. Since the commencement of rulemaking for human health criteria in the Water Quality Program in 2012, Ecology has breached their own written commitments for a completion date for a draft rule at least three consecutive times as follows.**

- a. In July 2012, during the pivot and delay from establishing a fish consumption rate in sediment management standards to water quality standards, Ecology Director Ted Sturdevant included a written timeline that listed a target date for completion of a draft rule as the Fall of 2013, with completion of a final rule by the Spring of 2014.<sup>280</sup>
- b. Ecology Director Maia Bellon inherited the issue upon taking office in 2013, and wrote to Michael Grayum, the Executive Director of the Northwest Indian Fisheries Commission in February 2014, indicating that *“Ecology plans to have a draft rule available by the end of March 2014, and a final rule submitted to EPA by December 31, 2014.”*<sup>281</sup>
- c. By April, 2014 it was clear that the March deadline had been breached, and the EPA again wrote to the Department of Ecology about the delay.<sup>282</sup> EPA committed to the initiation of Federal promulgation in 2015 if the state did not meet their own deadline to complete a rule by the end of 2014. In July 2014, Governor Inslee issued a press release announcing that he was directing the Department of Ecology to complete a draft rule by September 30, 2014. The

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<sup>278</sup> Seattle Times. June 26, 2013. Deal or no deal? Conflicting claims fly as state budget bickering persists.

<sup>279</sup> U.S. Environmental Protection Agency; June 21, 2013. . Letter from Region 10 Administrator Dennis McLerran to WA Department of Ecology Director Maia Bellon.

<sup>280</sup> WA Department of Ecology; July 16, 2012. Open letter from Director Ted Sturdevant.

<sup>281</sup> Washington Department of Ecology. February 14, 2014. Letter from Ecology Director Maia Bellon to NWIFC Director Michael Grayum.

<sup>282</sup> U.S. Environmental Protection Agency; April 8, 2014. Letter from Region 10 Administrator Dennis McLerran to WA Department of Ecology Director Maia Bellon.



Governor did not specify a date for a final rule, indicating that he would review the rule following potential action by the WA State Legislature in 2015.

**4. The net result has been that state decisions for the establishment of human health criteria have been based on political process, rather than public health and science.**

The Governor selected representatives to a “Governor’s Informal Advisory Group” (GIAG) in 2013, consisting of invited representatives from business, local government, non-governmental organizations, and four tribal leaders/representatives. Tribal representatives expressed their concern about delay in rule-making at the onset, and the need to respect government-to-government protocol between the state and tribes in decision making.<sup>283</sup> The GIAG met several times in 2013 to early 2014 to hear a series of presentations and to discuss issues of concern, but did not reach a set of consensus recommendations.

In July, 2014 Washington Governor Inslee announced his decisions with respect to the human health criteria and development of a rule for water quality standards.<sup>284</sup> He indicated that he would direct the Department of Ecology to set a fish consumption rate at 175 grams per day, and that he would reduce the protective level of the cancer risk rate by ten-fold to one-per-100,000 ( $10^{-5}$ ). Recognizing that these changes would make some chemical criteria less stringent, the Governor included a “no-backslide” provision that no chemical could get worse than what is allowed by current standards. Arsenic was an exception.

At the same time, the Governor announced that he would link rule-making to a toxics reduction policy initiative in the WA Legislature, essentially advancing more lenient provisions in the rule to be mitigated by a potential political process for a toxics reduction strategy. The Governor’s announcement did not specify how the legislative effort was related to rule-making, or how the rule might be revised based on the outcome of the political process.

*Update prepared November, 2015:*

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<sup>283</sup> Letter from 4 Tribes to Governor Inslee; August 14, 2013.

<sup>284</sup> Office of Governor Jay Inslee; July 9, 2014. Press release: “Inslee takes new approach to creating meaningful, effective state clean water standards.”

*July, 2015: “The House passed the governor's proposed bill during the regular legislative session, but the Senate failed to act on it. The governor directed Ecology to not adopt the proposed rule and instead to reevaluate the draft clean water rules while he and the agency assess options...”<sup>285</sup>*

*August, 2015: – Withdrawal of proposed rule by the Code Reviser’s Office (WSR 15-16-100).<sup>286</sup>*

*September 14, 2015: EPA rule announcement*

*October 8, 2015: Governor Inslee announces that Ecology will draft a new rule proposal at a FCR of 175 g/day and cancer risk level of  $10^{-6}$ , with special provisions for arsenic, PCBs and mercury.<sup>287</sup> The Governor’s press release indicates that the draft rule will be released in early 2016.*

- 5. In summary, the state has failed in its responsibility to protect water quality for fish consumption and other beneficial uses mandated by the Federal Clean Water Act.**

Throughout the last two decades, tribes have clearly and consistently communicated the need for a change in the state’s human health criteria, and have provided scientifically valid data to support this change. In response, the state of Washington has delayed their own recommendations, stalled in establishing human health criteria in water quality standards, allowed decision making on public health to be delayed or swayed by influence from permittees or industry advocates, and has made decisions based on political process rather than public health.

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<sup>285</sup> Washington Department of Ecology website accessed November 30, 2015 at:  
<http://www.ecy.wa.gov/programs/wq/ruledev/wac173201A/1203ov.html>

<sup>286</sup> <http://app.leg.wa.gov/documents/laws/wsr/2015/16/15-16-100.htm>

<sup>287</sup> Washington Governor Jay Inslee website. October 8, 2015. “Inslee announces new path on water quality rule, continues work on broader toxics reduction efforts.” <http://www.governor.wa.gov/news-media/inslee-announces-new-path-water-quality-rule-continues-work-broader-toxics-reduction>

The following detailed chronology documents the history of the establishment of human health criteria in Washington State water quality standards, and the tribes' repeated and consistent attempts to work with the state to remedy the inadequacy of the fish consumption rate and other criteria. All materials cited and/or attached are incorporated by reference.

*Detailed Chronology of Tribal Efforts to Establish Revised HHC and State's Response:*

1992            National Toxics Rule - EPA adopts national criteria for WA (including FCR of 6.5 and cancer risk rate of  $10^{-6}$ ).

The State of Washington specifically urged the EPA to adopt a cancer risk level of  $10^{-6}$ , based on considerations of multiple contaminants. On December 18, 1991, in its official comments on the proposed rule, the Department of Ecology urged EPA to promulgate a criterion for carcinogens at  $10^{-6}$ .

*"The State of Washington supports adoption of a risk level of one in one million for carcinogens. If EPA decides to promulgate a risk level below one in one million, the rule should specifically address the issue of multiple contaminants so as to better control overall site risks."*<sup>288</sup>

The fish consumption rate for Washington was adopted at the national default value at the time. EPA cited the absence of regional or state-specific data.

1994            CRITFC study documents FCR at 176 grams per day (95<sup>th</sup> percentile). Higher exposure is documented for tribal members who pursue a traditional diet.<sup>289</sup>

1996            Studies of the Tulalip and Squaxin Island Tribes of the Puget Sound region document consumption rates of 186 to 247 gpd (90<sup>th</sup>-95<sup>th</sup> percentile).<sup>290</sup>

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<sup>288</sup> NTR Final Rule Notice, 57 Fed.Reg. 60868 (Dec. 22, 1992).

<sup>289</sup> CRITFC (Columbia River Inter-Tribal Fish Commission), 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin. Columbia River Inter-Tribal Fish Commission Report reference #94-03, Portland, Oregon. –Accessed from: <http://www.critfc.org/reports/a-fish-consumption-survey-of-the-umatilla-nez-perce-yakama-and-warm-springs-tribes-of-the-columbia-river-basin/#sthash.i3j2pYTr.dpuf>

Abstract: <http://www.critfc.org/reports/a-fish-consumption-survey-of-the-umatilla-nez-perce-yakama-and-warm-springs-tribes-of-the-columbia-river-basin/>

<sup>290</sup> Toy, K.A., Polissar, N.L., Liao, S., and Mittelstaedt, G.D. 1996. A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region. Tulalip Tribes, Department of Environment.

- 1999 WA Dept of Ecology issues draft report analyzing FCRs and acknowledging the need to change state standards due to elevated risk to tribal and Asian populations.<sup>291</sup> The Risk Assessment Forum report recommended a default rate for reasonable maximum exposure of 175 grams per day for freshwater areas, to be used only with exposure assumptions of a bodyweight of 70 kg and 30 year duration of exposure. Further, the RAF recommended that, “the Water Quality Program consider the findings of this report when updating water quality standards.”
- 2000 Suquamish dietary study documents fish consumption rate of 489 gpd (90<sup>th</sup>-consumers) and 797 gpd (95<sup>th</sup>-consumers.)<sup>292</sup>
- 2002 National Environmental Justice Advisory Council (A Federal Advisory Committee to the EPA) report urges states to improve outdated and underprotective FCRs for tribal populations due to elevated risk.<sup>293</sup>
- 2002-2003 2002 Triennial Review of Washington State surface water quality standards. In a letter to the Dept. of Ecology Director with comments on the triennial review, the Confederated Tribes of the Umatilla Indian Reservation states that the standards should address human health as well as aquatic life.
- “The CTUIR recommends that the DOE develop standards to protect the water supply for tribal fisheries such that both Tribal members, with higher consumption rates, and non-Indian consumers are fully protected. These regulations should be developed in consultation with tribal governments and with EPA.”<sup>294</sup>*
- 2009-2011 Ecology Directors Jay Manning and Ted Sturdevant commit to the adoption of a more protective FCR in both the Water Quality Standards and the Sediment Management Standards. The issue is added to the 2010-2011 Work Plan<sup>295</sup> for

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<sup>291</sup> Washington State Department of Ecology, 1999. Draft analysis and selection of fish consumption rates for risk assessments and risk-based standards. Ecology Pub. 99-200. L. Kiell and L. Kissinger and an interagency Risk Assessment Forum. <https://fortress.wa.gov/ecy/publications/publications/99200.pdf>

<sup>292</sup> Suquamish Tribe, 2000. Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region. August 2000.

<sup>293</sup> National Environmental Justice Advisory Council, 1992. Fish Consumption and Environmental Justice: A report developed from the meeting of the National Environmental Justice Advisory Council meeting of December 3-6, 2001.

<sup>294</sup> Confederated Tribes of the Umatilla Indian Reservation; March 14, 2003. Letter from CTUIR Natural Resources Director Michael Farrow to WADOE Director Tom Fitzsimmons.

<sup>295</sup> Ecology/Tribal Environmental Council, 2010 / 11 Annual Workplan Development

the Ecology/Tribal Environmental Council (a government-to-government communication forum between Washington State and tribes). Due to existing technical work on the SMS by the Toxic Cleanup Program, Ecology asks the tribes to wait while the SMS is completed first. With the understanding that the SMS process will analyze and document the scientific information on FCR, the tribes agree to a 3-step pathway for adopting an accurate and protective FCR:

- Completion of revised Sediment Management Standards
- Completion of revised Water Quality Standards
- Implementation Rules for Water Quality Standards with revised compliance schedules and variances. These are intended to allow flexibility for industrial and municipal permittees.

2009-2010 The Environmental Protection Agency, University of Washington, and Tribal representatives conduct two intergovernmental workshops on fish consumption and treaty rights.<sup>296</sup> Workshops included presentations from the WA Department of Ecology.<sup>297</sup> The Ecology presentation described the need to amend the FCR.

2010 Triennial Review of State Water Quality standards identifies the need for the FCR to be increased.<sup>298</sup> Comments to that effect were submitted by NWIFC,<sup>299</sup> the Kalispel, Quinault, and the Swinomish Tribes, and the US EPA. In the response to the comments, the state indicates that they will work toward the establishment of an FCR. Note the summary table, pages 14-17 pertaining to TOXICS: Human Health Criteria. Tribal comments recommended various FCR values based on tribal data, ranging from at least 175 gpd (Confederated Tribes of the Umatilla Reservation) to 766.7 gpd (Suquamish).

On p. 17 of the response document table, Stoel Rives LLP comment indicated that, *"If Ecology chooses to revise the criteria to reflect a higher fish consumption rate such as Oregon is considering, then Ecology should also revise the risk level from one in a million ( $10^{-6}$ ) additional lifetime cancer rate to one in 100,000 ( $10^{-5}$ )."*

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<sup>296</sup> University of Washington Superfund Research Program. August 12-13, 2009. Agenda for "Tribal Rights and Fish Consumption: Issues and Opportunities in the Pacific Northwest." Accessed from: [http://depts.washington.edu/sfund/forthepublic/tribal\\_rights.html](http://depts.washington.edu/sfund/forthepublic/tribal_rights.html)

<sup>297</sup> Ecology, 2010. "Ecology's Perspective on Fish Consumption Rate Revisions and Rule Development." Materials from the Workshop on Fish Consumption Rates, Water Quality Standards and Tribal Treaty Rights, June 16, 2010.

<sup>298</sup> Washington Department of Ecology; August, 2011. Washington Water Quality Standards 2010 Triennial Review – Comments and Response. <http://www.ecy.wa.gov/programs/wq/swqs/TrienRevComm.html>

<sup>299</sup> Northwest Indian Fisheries Commission; December 17, 2010. Letter from NWIFC Executive Director Michael Grayum to WA Department of Ecology Director Ted Sturdevant.

Ecology responded: *“At present Ecology has no plans to change the risk level ....”*

Aug 2011 Ecology contracts with NWIFC to work toward the development of a single FCR to be used in both sediment management standards and water quality standards. From Attachment A: Statement of Work:

*“The common need for a revised and appropriate FCR for use in calculating human health-based criteria and clean-up requirements prompted Ecology to ask the NWIFC to coordinate work among tribes in Washington to develop agreement on one fish consumption rate that the tribes would find acceptable in calculating water quality criteria and clean-up levels.*

*Tribes have been aware of and active on FCR issues for many years and have been requesting water quality criteria review and revision for over a decade. A number of the tribes in Washington have conducted fish consumption surveys to more accurately determine and document the amount (rate) of fish that their people consume, and have revised their Reservation water quality standards to reflect these realistic consumption rates. The issue is one of both public health and environmental protection. It is also important to tribes from an Environmental Justice perspective that Washington’s water quality standards do not exclude tribal people and tribal culture from protection.”<sup>300</sup>*

NWIFC submitted a final report to the Department of Ecology at the end of the contract period (June 30, 2012) describing outreach efforts to tribes and stakeholders, how assumptions changed during the course of the contract, and a summary of comments on the first Technical Support Document process.<sup>301</sup>

Sept 2011 Ecology releases the FCR Technical Support Document recommending a default range of 157-267 gpd.<sup>302</sup> As shown by the original document cover<sup>303</sup> the document was not originally labeled as Version 1. The documents posted on the Ecology website were later re-labeled when Ecology withdrew the document in 2012, removed numerical recommendations, made other changes, and reissued

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<sup>300</sup> Washington Department of Ecology and the Northwest Indian Fisheries Commission. August 15, 2011. Interagency Agreement No. C1200088 for the Development of a Fish Consumption Rate.

<sup>301</sup> Northwest Indian Fisheries Commission. June 30, 2012. Fish consumption rates: tribal outreach, stakeholder exchange and coordination. Final report to the Washington Department of Ecology, Contract No. C1200088.

<sup>302</sup> Washington Department of Ecology, Toxics Cleanup Program. September 2011. Fish Consumption Rates Technical Support Document. Publication no. 11-09-050. (This version was downloaded from Ecology’s website after it was re-labeled as Version 1.)

<sup>303</sup> Scanned copy of original report cover for above referenced document.

the document as Version 2.0. Ecology's News Release indicated that the information was intended for revisions in both toxics cleanup and water quality standards, and that standard-setting was a logical follow-up to toxics reduction efforts already in progress.<sup>304</sup>

- Oct 2011 EPA approves Oregon FCR in water quality standards at 175 g/day, following a multi-year process with tribes and stakeholders, and including review of tribal fish consumption data.<sup>305</sup>
- Dec 2011 Ecology holds workshops on FCR and Implementation Rules for WQ Standards with revised timelines.<sup>306</sup>
- Jan 2012 Comments on Technical Support Document Version 1.0 related to tribal concerns are submitted by Spokane, Yakama, Kalispel, Colville, Jamestown S'Klallam, Suquamish, Squaxin Island, Swinomish, Lummi, Lower Elwha Klallam, Northwest Indian Fisheries Commission, Columbia River Intertribal Fish Commission, and the Center for Indian Law and Policy at Seattle University.

Additional letters on the fish consumption issue are submitted from several tribes and tribal organizations to the Governor and Legislators during early 2012.<sup>307, 308, 309</sup> In particular, NWIFC Chairman Billy Frank, Jr. wrote to express tribal concerns about tribes and other groups of high fish consumers being treated differently than the general population.<sup>310</sup>

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<sup>304</sup> Washington Department of Ecology News Release; October 11, 2011. "Ecology starts dialogue about toxic chemicals in fish to better protect public health."

<sup>305</sup> US Environmental Protection Agency; October 17, 2011. Letter from Region 10 Office of Water and Watersheds Director Michael Bussell to Oregon Department of Environmental Quality-Water Quality Division Administrator Neil Mullane. <http://www.epa.gov/region10/pdf/water/or-tds-hhwqs-transmittal-ltr-2011.pdf>

<sup>306</sup> Washington Department of Ecology MTCA-SMS-Rule Update Archives for December 2011 Workshop materials and references. <http://listserv.wa.gov/cgi-bin/wa?A1=ind1112&L=MTCA-SMS-RULE-UPDATE>

<sup>307</sup> Colville Confederated Tribes; February 29, 2012. Letter from Tribal Chairman Michael Finley to Washington State Senator Lisa Brown re: Rulemaking to improve environmental standards for fish consumption.

<sup>308</sup> Suquamish Tribe; February 29, 2012. Letter from Tribal Chairman Leonard Forsman to Washington State Representatives Rolfes, Appleton, and Hansen re: Fish consumption rates and environmental standards.

<sup>309</sup> Tulalip Tribes; February 28, 2012. Letter from Chairman Melvin Sheldon to Washington State Senator Nick Harper re: Fish consumption rates and rule-making by the Department of Ecology.

<sup>310</sup> Northwest Indian Fisheries Commission; February 29, 2012. Letter from Chairman Billy Frank, Jr. to Governor Chris Gregoire re: fish consumption rates and rule-making by the Department of Ecology.

Beginning in February, 2012 the Affiliated Tribes of Northwest Indians adopted a series of resolutions to the state of Washington and the U.S. Environmental Protection Agency urging improved water quality standards.<sup>311, 312, 313</sup>

- May 2012 Ecology holds workshops on the Sediment Mgt Standards, indicating they plan to adopt a default FCR using tribal fish consumption levels. See Washington Department of Ecology MTCA-SMS-Rule Update Archives for May 2012 Workshop materials and references.<sup>314</sup>
- June 2012 NWIFC holds a tribal leaders summit followed by Centennial Accord meeting. Ecology indicates they intend to adopt FCR in Sediment Mgt Standards in 2012
- July 2012 Ecology announces intent to change the establishment of a FCR in state standards from the Toxics Cleanup Program to the Water Quality Program.<sup>315</sup> Director Sturdevant's letter indicates that Ecology will file a CR-101 to begin the process of establishing human health criteria in surface water quality standards, including a fish consumption rate, by August 2012. A timeline attached to the letter specifies a target for filing the CR-102 by the Fall of 2013, with a rule adopted Spring, 2014. CR-101 was filed September 13, 2012.
- August 2012 Director Sturdevant sets up three discussion forums and invites tribes to participate at the Delegates Table of the Policy Forum.<sup>316</sup>
- July-Dec 2012 Tribal correspondence to EPA and Ecology documents frustration with the delay, and many tribes choose not to participate in the new state process.
- Puget Sound Partnership adopts resolution 2012-04 requesting that the Department of Ecology complete the update of fish consumption rates and adopt it into water quality standards by the end of 2013.<sup>317</sup>

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<sup>311</sup> Affiliated Tribes of Northwest Indians. February, 2012. Resolution 12-19.

<sup>312</sup> Affiliated Tribes of Northwest Indians. September, 2012. Resolution 12-54.

<sup>313</sup> Columbia River Intertribal Fish Commission. October 31, 2014. Letter from CRITFC Chairman Carlos Smith to EPA Administrator Gina McCarthy with attached ATNI Resolution 14-56.

<sup>314</sup> Washington Department of Ecology MTCA-SMS-Rule Update Archives. <http://listserv.wa.gov/cgi-bin/wa?A1=ind1112&L=MTCA-SMS-RULE-UPDATE>. Accessed March 21, 2015

<sup>315</sup> WA Department of Ecology; July 16, 2012. Open letter from Director Ted Sturdevant.

<sup>316</sup> WA Department of Ecology; August 15, 2012. Letter from Director Sturdevant to tribal chairs.

<sup>317</sup> Puget Sound Partnership; August 9, 2012. Resolution 2012-04 Fish Consumption Rates.



EPA Regional Administrator McLerran writes to Ecology to urge progress and assures tribes that they will oversee timely completion of human health criteria by the state.<sup>318, 319, 320</sup> Director Sturdevant responds that a revised version of the FCR Tech Support Document will be done by November 2012 for use in developing WQS. (second draft came out August 2012, final in January 2013)<sup>321</sup>

Also during this period, the Lummi Nation and Colville Confederated Tribes publish fish consumption studies (see Appendix C for citations)

January 2013 Ecology issues revised final Technical Support Document (V 2.0) without numerical recommendations for the fish consumption rate.

2013 Journalists document industry intervention into the fish consumption rate decision-making process and state budget.<sup>322, 323, 324, 325, 326, 327, 328, 329</sup> Additional description of the issue is published in the American Law Journal.<sup>330</sup>

2013-2014 *New state administration with Governor Inslee and Ecology Director Bellon.*

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<sup>318</sup> August 2012: Letter NWIFC to McLerran—complaint about the delay

<sup>319</sup> Sept 6, 2012 McLerran letter to Sturdevant urging progress on FCR

<sup>320</sup> Sept 14, 2012 McLerran letter to NWIFC stating that they will oversee timely progress by the state

<sup>321</sup> Sept 25 2012: Letter from Sturdevant to McLerran with timelines

<sup>322</sup> McClure, Robert. March 30, 2013. Business interests trump health concerns in fish consumption fight. Investigate West.

<sup>323</sup> McClure, Robert and Olivia Henry. April 23, 2013. How Boeing, allies torpedoed state's rules on toxic fish.

<sup>324</sup> Environmental Health Perspectives 121:11-12. November-December 2013. Meeting the needs of the people: Fish Consumption Rates in the Pacific Northwest.

<sup>325</sup> Seattle Times. June 26, 2013. Deal or no deal? Conflicting claims fly as state budget bickering persists.

<sup>326</sup> Everett Herald. June 25, 2013. Boeing's opposition to fish study a sticking point in budget.

<sup>327</sup> The Inlander. April 23, 2013. Deadly catch.

<sup>328</sup> Seattle Times. October 1, 2013. Boeing's economic impact on state estimated at \$70B. and October 2, 2013. Inslee wants aerospace tax breaks extended if Boeing builds 777X here. .

<sup>329</sup> Borderlands Research and Education, 2014. No justice on the plate.

<sup>330</sup> O'Neill, C. 2013. Fishable waters. American Law Journal 1:2 (Spring 2013)

### Ecology postponement under Inslee administration:

During a meeting with Tribal Leaders on April 25, 2013 at Nisqually, Director Bellon verbally commits to the schedule established by her predecessor, Ted Sturdevant, to complete a draft rule in the “fall/winter of 2013-2014.”

Ecology presents a public information meeting on November 3, 2013 with draft rule options.<sup>331</sup>

The schedule established by Sturdevant in 2013 is postponed by Ecology Director Bellon in early 2014:

*“Ecology plans to have a draft rule available by the end of March 2014, and a final rule submitted to EPA by December 31, 2014.”<sup>332</sup>*

EPA writes to Ecology on April 8, 2014 and indicates that the EPA would begin federal rule promulgation in 2015 if a final rule was not completed by the end of 2014:

*“If Ecology does not follow through with its stated timeframe for final rule adoption, the EPA intends to take the steps necessary to allow for a proposal of federally revised human health criteria for Washington, via amendment of the National Toxics Rule human health criteria for Washington, by May 31, 2015.”<sup>333</sup>*

On April 18, 2014, Tribal Leaders met with officials from WADOE, Governor’s Office, and EPA. Ecology stated that they still planned on a final rule by the end of 2014, and expected a draft rule around June 30, 2014.

### Governor Inslee Involvement and the Governor’s Informal Advisory Group

Governor Inslee establishes the Governor’s Informal Advisory Group in August 2013 and invites four tribal representatives, who express concerns about participation.<sup>334</sup> A subgroup to the GIAG called the Creative Solutions Group is

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<sup>331</sup> Washington Department of Ecology; November 6, 2013. Water Quality Standards rulemaking – general information meeting. Morning and afternoon presentations.

<sup>332</sup> Washington Department of Ecology; February 14, 2014. Letter from Ecology Director Maia Bellon to NWIFC Executive Director Michael Grayum.

<sup>333</sup> U.S. Environmental Protection Agency; April 8, 2014. Letter from Region 10 Administrator Dennis McLerran to WA Department of Ecology Director Maia Bellon.

<sup>334</sup> Letter from 4 Tribes to Governor Inslee; August 14, 2013

formed and issues a report, but tribal representatives indicate that they are not in agreement with the recommendations.<sup>335</sup> Ecology presents a draft rule overview to the GIAG on September 23, 2013.<sup>336</sup> Business and municipalities representatives including the City of Bellingham and Weyerhaeuser present economic impact information to the GIAG in December, 2013. Tribes present their concerns to the GIAG on February 7, 2014.<sup>337</sup> Following the conclusion of the GIAG process in March 2014, the leaders of the Swinomish, Jamestown S’Klallam and Suquamish Tribe (who were invited to the GIAG) present a letter to the Governor expressing their continuing concerns, and urging the Governor to focus on implementation while retaining protective standards. Additional letters are submitted by the Puyallup Tribe, Port Gamble S’Klallam Tribe, Tulalip Tribes, Lummi Nation, Kalispel Tribe, Stillaguamish Tribe, Northwest Indian Fisheries Commission, and Columbia River Intertribal Fish Commission in March and April of 2014.

On July 9, 2014, Governor Jay Inslee announced a Toxics Reduction Initiative package, consisting of a draft rule for water quality standards linked to legislation for a toxics reduction strategy to be introduced to the 2015 WA State Legislature:

*“Inslee is directing the Department of Ecology to issue a preliminary draft rule no later than Sept. 30. He will submit legislation to the Legislature in 2015 and will make a decision on whether to adopt the final rule only after seeing the outcome of the session.”<sup>338</sup>*

Following Inslee’s announcement, letters are submitted from NWIFC, the Lummi Nation, and the Jamestown S’Klallam Tribe to the Governor; and from the Squaxin Island Tribe, Yakama Nation, Lower Elwha Klallam Tribe, NWIFC and CRITFC to EPA requesting EPA take action on the timing and substance of the state rule. (see attached file of official correspondence 2014)

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<sup>335</sup> Yakama Nation; January 28, 2014. Letter from Phil Rigdon, Deputy Director of the Yakama Nation Department of Natural Resources to JT Austin, Policy Advisor-Office of the Governor re: Creative Solutions Summary Report to the Governor’s Informal Advisory Group.

<sup>336</sup> Susewind, K., September 23, 2013. Current rule updates for the water quality standards.

<sup>337</sup> Peters, J. and F. Wilshusen; February 3, 2014. Fish consumption rates and Washington water quality standards: tribal perspectives – traditional foods, treaty rights, and human health. (Presentation delayed to February 7, 2014)

<sup>338</sup> Office of Governor Jay Inslee; July 9, 2014. Press release: “Inslee takes new approach to creating meaningful, effective state clean water standards.”

The National Congress of American Indians adopts resolution ATL-14-31 in October, 2014 requesting EPA to intervene in the use of a lower cancer risk level in water quality standards.<sup>339</sup>

Dec. 2014 EPA notifies the WA Department of Ecology of intent to begin federal rule promulgation.<sup>340</sup>

2015 The WA Department of Ecology filed a CR102 for a draft rule on January 12, 2015.

The Governor's toxic reduction bill emphasizing the use of chemical action plans was introduced to the WA State Legislature on January 21, 2015 as SB 5406, and failed to pass.

Proposed rule elapses in August, 2015. EPA files proposed rule in September, 2015. Governor Inslee announces intent to prepare a new draft rule in 2016.

2016 WA Department of Ecology files a revised draft rule in February, 2016.



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<sup>339</sup> Columbia River Intertribal Fish Commission; December 23, 2014. Letter from CRITFC Chairman Carlos Smith. to EPA Administrator Gina McCarthy with attached NCAI Resolution.

<sup>340</sup> U.S. Environmental Protection Agency; December 18, 2014. Letter from Region 10 Administrator Dennis McLerran to Washington Department of Ecology Director Maia Bellon.

## **B. Chemical Comparison Spreadsheets**

The following spreadsheets compare existing standards under the NTR with the 2015 EPA Proposal for Washington, Washington Department of Ecology 2016 proposal, and the approved Oregon water quality standards. The spreadsheet is divided into two sections for freshwater and marine water criteria (2 pages each). The spreadsheet also denotes which of the proposed standards (EPA or WA 2016) would be more protective, and what criteria primarily cause this discrepancy.

The spreadsheets were prepared in March, 2016 by Ridolfi Environmental under contract with NWIFC.

An Excel version of the spreadsheets is contained in the electronic attachments.

NWIFC prepared a tally of the chemical comparisons between the state proposal and the proposed EPA rule and the Oregon approved rule. This table is also contained in Appendix B.

	A	B	C	D	E	F	G	H	I	J
1										
2	Freshwater		FCR = 6.5 g/day	FCR = 175 g/day	FCR = 175 g/day				FCR = 175 g/day	
3		Water - Organisms	Risk Level = $1 \times 10^{-6}$	Risk Level = $1 \times 10^{-6}$	Risk Level = $1 \times 10^{-6}$				Risk Level = $1 \times 10^{-6}$	
4										
5	Cancer /Noncancer	FRESHWATER	National Toxics Rule	EPA 2015 WA	WA 2016 Proposed	Lower Value	Ratio WA 2016: EPA 2015 WA	Main Reason for Difference	OR Approved	Lower Value (OR approved or WA proposed)
6	nc	1,1,1-Trichloroethane		7711	47000	EPA	6.1	RSC; BAF/BCF		
7	c	1,1,2,2-Tetrachloroethene	0.17	0.103	0.120	EPA	1.2	BAF/BCF	0.12	same
8	c	1,1,2-Trichloroethane	0.60	0.35	0.44	EPA	1.2	BAF/BCF	0.44	same
9	nc	1,1-Dichloroethylene	0.057	280	1200	EPA	4.3	RSC	230	OR
10	nc	1,2,4-Trichlorobenzene	NC	0.036	0.120	EPA	3.4	RSC	6.4	WA
11	nc	1,2-Dichlorobenzene(o)	2,700	287	2000	EPA	7.0	RSC	110	OR
12	c	1,2-Dichloroethane	0.38	0.32	9.30	EPA	28.9	BAF/BCF	0.35	OR
13	c	1,2-Dichloropropane	NC	0.72	0.71	same	1.0	Same	0.38	OR
14	c	1,2-Diphenylhydrazine	0.040	0.0140	0.0150	EPA	1.1	Same	0.014	OR
15	nc	1,2-trans-Dichloroethylene	NC	99	600	EPA	6.0	RSC	120	OR
16	nc	1,3-Dichlorobenzene(m)	400	0.90	13	EPA	14.5	RSC; BAF/BCF	80	WA
17	c	1,3-Dichloropropane	10	0.22	0.24	EPA	1.1	Same	0.3	WA
18	nc	1,4-Dichlorobenzene(p)	400	65	460	EPA	7.0	RSC	16	OR
19	c	2,3,7,8-TCDD	1.30E-08	5.84E-10	6.40E-08	EPA	109.5	WA calculated as non-carcinogen	5.1E-10	OR
20	c	2,4,6-Trichlorophenol	2.1	0.25	0.25	same	1.0	Same	0.23	OR
21	nc	2,4-Dichlorophenol	93	4.4	25	EPA	5.6	RSC	23	OR
22	nc	2,4-Dimethylphenol	NC	88	85	WA2016	1.0	EPA used new lower BAF	76	OR
23	nc	2,4-Dinitrophenol	70	10.1	60	EPA	5.9	RSC	62	WA
24	c	2,4-Dinitrotoluene	0.11	0.039	0.039	Same	1.0	Same	0.084	WA
25	nc	2-Chloronaphthalene	NC	115.3	170	EPA	1.5	RSC	150	OR
26	nc	2-Chlorophenol	NC	24	15	WA2016	0.6	EPA used new lower BAF	14	OR
27	nc	2-Methyl-4,6-dinitrophenol	13	1.2	7.1	EPA	6.1	RSC	9.2	WA
28	c	3,3'-Dichlorobenzidine	0.040	0.0129	0.0031	WA2016	0.3	EPA used new lower BAF	0.0027	OR
29	nc	3-Methyl-4-Chlorophenol		173	36	WA2016	0.2	EPA used new lower BAF		
30	c	4,4'-DDD	8.3E-04	7.9E-06	3.6E-05	EPA	4.5	BAF/BCF	0.000031	OR
31	c	4,4'-DDE	5.9E-04	8.8E-07	5.1E-05	EPA	57.8	BAF/BCF	0.000022	OR
32	c	4,4'-DDT	5.9E-04	1.2E-06	2.5E-05	EPA	20.5	BAF/BCF	0.000022	OR
33	nc	Acenaphthene	NC	10	110	EPA	10.5	RSC; BAF/BCF	95	OR
34	nc	Acrolein	S20	3.1	1	WA2016	0.3	EPA used new lower BAF	0.88	OR
35	c	Acrylonitrile	0.058	0.06	0.02	WA2016	0.3	EPA used new lower BAF	0.018	OR
36	c	Aldrin	1.3E-04	4.1E-08	5.7E-06	EPA	137.8	BAF/BCF	0.000005	OR
37	c	alpha-BHC	0.0039	4.8E-05	5.0E-04	EPA	10.4	BAF/BCF	0.00045	OR
38	nc	alpha-Endosulfan	0.93	2.57	97	EPA	37.3	RSC; BAF/BCF	8.5	OR
39	nc	Anthracene	9,600	44.0	3100	EPA	70.5	RSC; BAF/BCF	2900	OR
40	nc	Antimony	14	2.49	12	EPA	4.8	RSC	5.1	OR
41	c	Arsenic	0.018	0.0045	10	EPA	2209.4	WA used Drinking water MCL	2.1	OR
42	c	Asbestos	7,000,000 fibers/L	7,000,000 fibers/l	7,000,000 fibers/l	Same	1.0	Same	7,000,000	OR
43	c	Benzene	1.2	0.44	0.44	Same	1.0	Same	0.44	OR
44	c	Benzidine	1.2E-04	1.3E-04	2.0E-05	WA2016	0.2	EPA used new lower BAF	0.000018	OR
45	c	Benzo(a)anthracene	2.8E-03	1.60E-04	1.40E-02	EPA	87.5	BAF/BCF	0.0013	OR
46	c	Benzo(a)pyrene	2.8E-03	1.60E-05	1.40E-03	EPA	87.5	BAF/BCF	0.0013	OR
47	c	Benzo(b)fluoranthene	2.8E-03	1.6001E-04	1.40E-02	EPA	87.5	BAF/BCF	0.0013	OR
48	c	Benzo(k)fluoranthene	2.8E-03	1.60E-03	1.40E-02	EPA	8.7	BAF/BCF	0.0013	OR
49	c	beta-BHC	1.4E-02	1.31E-03	1.80E-03	EPA	1.4	BAF/BCF	0.0016	OR
50	nc	beta-Endosulfan	0.93	9.82	9.7	EPA	2.5	RSC	8.5	OR
51	c	Bis(2-chloro-1-methylethyl)ether	1,400	154	1100	EPA	7.1	BAF/BCF	1200	WA
52	nc	Bis(2-chloroethyl)ether	0.031	0.027	0.020	WA2016	0.7	EPA used new lower BAF	0.053	WA
53	c	Bis(2-ethylhexyl)phthalate	1.8	0.045	0.230	EPA	5.1	BAF/BCF	0.2	OR
54	c	Bromoform	4.3	4.5	5.8	EPA	1.3	BAF/BCF	3.3	OR
55	c	Butylbenzyl Phthalate	NC	0.0177	0.5600	EPA	44.3	BAF/BCF	190	WA

	A	B	C	D	E	F	G	H	I	J
56	Freshwater		FCR = 6.5 g/day	FCR = 175 g/day	FCR = 175 g/day				FCR = 175 g/day	
57		Water Organisms	Risk Level = $1 \times 10^{-6}$	Risk Level = $1 \times 10^{-6}$	Risk Level = $1 \times 10^{-6}$				Risk Level = $1 \times 10^{-6}$	
58		FRESHWATER	National Toxics Rule	EPA 2015 WA	WA 2016 Proposed	Lower Value	Ratio WA 2016: EPA 2015 WA	Main Reason for Difference	OR Approved	Lower Value (OR approved or WA proposed)
59	Cancer /Noncancer									
60	c	Carbon Tetrachloride	0.25	0.24	0.20	WA2016	0.8	EPA used new lower BAF	0.1	OR
61	c	Chlordane	0.00057	2.3E-05	9.3E-05	EPA	4.3	BAF/BCF	0.000081	OR
62	nc	Chlorobenzene	880	51	380	EPA	7.4	RSC	74	OR
63	nc	Chlorobromomethane	0.41	0.53	0.65	EPA	1.2	RSC	0.31	OR
64	nc	Chloroform	5.7	52	260	EPA	5.0	RSC	260	OR
65	c	Chrysene	0.0028	0.0180	1.4000	EPA	87.5	BAF/BCF	0.0013	OR
66	nc	Copper	NC	1300	1300	Same	1.0	Drinking water MCL	1300	OR
67	nc	Cyanide	700	3.7	19.0	EPA	5.1	RSC	130	WA
68	c	Dibenzo(a,h)anthracene	0.0028	1.6E-05	1.4E-03	EPA	87.5	BAF/BCF	0.0013	OR
69	c	Dichlorobromomethane	0.27	0.73	0.77	EPA	1.1	Same	0.42	OR
70	c	Dieldrin	0.00014	7.0E-08	6.1E-06	EPA	87.5	BAF/BCF	0.0000053	OR
71	nc	Diethyl Phthalate	29,000	76	4200	EPA	53.8	RSC, BAF/BCF	3800	OR
72	nc	Dimethyl Phthalate	313,000	228	92000	EPA	403.9	RSC, BAF/BCF	84000	OR
73	nc	Di-n-Butyl Phthalate	2,700	3	450	EPA	143.4	RSC, BAF/BCF	400	OR
74	nc	Disulfoton Sulfate	0.93	3.57	9.70	EPA	2.7	RSC, BAF/BCF	8.5	OR
75	nc	Endrin	0.78	2.38E-03	3.40E-02	EPA	14.3	RSC, BAF/BCF	0.024	OR
76	nc	Endrin Aldehyde	0.78	0.1275	0.0340	WA2016	0.3	EPA used new lower BAF	0.03	OR
77	nc	Ethylbenzene	3,100	12	200	EPA	17.1	RSC, BAF/BCF	160	OR
78	nc	Fluoranthene	300	2.4	16	EPA	6.6	RSC	14	OR
79	nc	Fluorene	1,300	5.1	420	EPA	83.1	RSC, BAF/BCF	390	OR
80	nc	gamma-BHC (Lindane)	0.019	0.43	15	EPA	35.1	RSC, BAF/BCF	0.17	OR
81	c	Heptachlor	0.00021	3.4E-07	9.9E-05	EPA	29.3	BAF/BCF	0.0000079	OR
82	c	Heptachlor Epoxide	0.00010	2.4E-06	7.4E-06	EPA	3.1	BAF/BCF	0.0000039	OR
83	c	Hexachlorobenzene	0.00075	5.0E-06	5.1E-05	EPA	10.2	BAF/BCF	0.000025	OR
84	c	Hexachlorobutadiene	0.44	1.0E-02	6.9E-01	EPA	67.2	BAF/BCF	0.36	OR
85	nc	Hexachlorocyclopentadiene	240	0.418	150	EPA	359.2	RSC, BAF/BCF	30	OR
86	c	Hexachloroethane	1.9	0.0186	0.11	EPA	5.9	BAF/BCF	0.29	WA
87	c	Indeno(1,2,3-cd)pyrene	0.0028	1.80E-04	1.40E-02	EPA	87.5	BAF/BCF	0.0013	OR
88	c	Isophorone	8.4	30	27	WA2016	0.9	EPA used new lower BAF	27	OR
89	nc	Methyl Bromide	46	121	520	EPA	4.3	RSC	37	OR
90	c	Methyl mercury		0.033				WA didn't adopt		
91	nc	Methylene Chloride	4.7	9.0	15	EPA	1.8	RSC	4.3	OR
92	nc	Nickel	610	30.1	150	EPA	5.0	RSC	140	OR
93	nc	Nitrobenzene	17	10.9	55	EPA	5.1	RSC	14	OR
94	c	Nitrosodimethylamine, N-	0.00069	0.00065	0.00065	Same	1.0	Same	0.00068	WA
95	c	Nitrosodi-n-Propylamine, N-	NC	0.0044	0.0044	Same	1.0	Same	0.0046	WA
96	c	Nitrosodiphenylamine, N-	5.0	0.6232	0.6200	same	1.0	Same	0.55	OR
97	c	Pentachlorophenol	0.29	0.0071	0.0460	EPA	21.5	BAF/BCF	0.15	WA
98	nc	Phenol	21,000	3513	18000	EPA	5.1	RSC	5400	OR
99	c	Polychlorinated biphenyls	0.00017	7.3278E-06	1.7000E-04	EPA	23.2	WA calculated as non-carcinogen	0.0000064	OR
100	nc	Pyrene	980	3.1	310	EPA	98.7	RSC	230	OR
101	nc	Selenium	NC	24.7	120	EPA	4.9	RSC	120	OR
102	c	Tetrachloroethylene	0.80	2.5	4.9	EPA	1.9	BAF/BCF	0.34	OR
103	nc	Thallium	17	0.049	0.240	EPA	5.6	RSC	0.043	OR
104	nc	Toluene	5,800	29	180	EPA	6.2	RSC	720	WA
105	c	Toxaphene	0.00073	6.6E-05	3.2E-05	WA2016	0.5	EPA used new lower BAF	0.000028	OR
106	c	Trichloroethylene	2.7	0.34	0.38	EPA	1.1	BAF/BCF	1.4	WA
107	c	Vinyl Chloride	2.0	0.020	0.020	same	1.0	Same	0.023	WA
108	nc	Zinc	NC	452	2300	EPA	5.1	RSC	2100	OR
109										
110	Freshwater	WA Proposed Criteria less stringent than NTR								
111		Both WA and EPA Proposed Criteria less stringent than NTR								

Marine	Organisms Only	PCR = 6.5 g/day 1 x 10 <sup>-6</sup>	PCR = 175 g/day 1 x 10 <sup>-5</sup>	PCR = 175 g/day 1 x 10 <sup>-5</sup>				PCR = 175 g/day 1 x 10 <sup>-5</sup>	
Cancer / Noncancer	MARINE	(RIR)	EPA 2015 WA	WA 2016 Proposed	Lower Value	Ratio WA 2016/EPA 2015 WA	Main Reason for Difference	OR Approved	Lower Value (OR approved or WA proposed)
nc	1,1,1-Trichloroethane		16286	160000	EPA	9	RSC: BAF/BCF		
c	1,1,2,2-Tetrachloroethane	11	0.27	0.46	EPA	1.7	BAF/BCF	0.40	OR
c	1,1,2-Trichloroethane	42	0.8	1.8	EPA	2	BAF/BCF	1.90	OR
nc	1,3-Dichloroethylene	3.2	1.758	4.100	EPA	2	RSC	71E	OR
nc	1,2,4-Trichlorobenzene	NC	0.357	0.16	EPA	4	RSC	7	WA
nc	1,2-Dichlorobenzene(a)	17,000	334	2,500	EPA	7	RSC	130	OR
c	1,2-Dichloroethane	99	73	120	EPA	1.6	BAF/BCF	3.70	OR
c	1,2-Dichloropropane	NC	3.3	3.1	WA2016	0.95	Same	1.5	OR
c	1,2-Diphenylhydrazine	0.54	9.021	0.023	EPA	1	Same	0.02	OR
nc	1,2-trans-Dichloroethylene	NC	369	5,820	EPA	15	RSC: BAF/BCF	1000	OR
nc	1,3-Dichlorobenzene(m)	2,630	0.96	10	EPA	17	RSC: BAF/BCF	96	WA
c	1,3-Dichloropropene	1,700	1.2	2	EPA	2	BAF/BCF	2.1	WA
nc	1,4-Dichlorobenzene(p)	2,600	76	580	EPA	8	RSC	13	OR
c	2,3,7,8-TCDF	1.48E-08	5.86E-10	6.40E-08	EPA	109	WA calculated as non-carcinogen	5.19E-10	OR
c	2,4,6-Trichlorophenol	0.5	0.26	0.38	EPA	1	Same	0.34	OR
nc	2,4-Dichlorophenol	790	5.7	54	EPA	8	RSC	23	OR
nc	2,4-Dimethylphenol	NC	261	87	WA2016	0.37	EPA used new lower BAF	85	OR
nc	2,4-Dinitrophenol	14,000	42	910	EPA	15	RSC: BAF/BCF	530	OR
c	2,4-Dinitrotoluene	8.1	0.18	0.18	EPA	1.02	Same	0.34	WA
nc	2-Chloronaphthalene	NC	122	700	EPA	1.48	RSC	160	OR
nc	2-Chlorophenol	NC	85	17	WA2016	0.20	EPA used new lower BAF	15	OR
nc	2-Methyl-4,6-dinitrophenol	768	2.7	26	EPA	9	RSC: BAF/BCF	28	WA
c	3,3'-Dichlorobenzidine	0.077	0.015	0.0033	WA2016	0.22	EPA used new lower BAF	0.0028	OR
nc	3-Methyl-4-chlorophenol		234	90	WA2016	0.35	EPA used new lower BAF		
c	4,4'-DDT	0.00084	7.94E-06	3.60E-05	EPA	5	BAF/BCF	0.00031	OR
c	4,4'-DDE	0.00059	8.83E-07	5.10E-05	EPA	58	BAF/BCF	0.00022	OR
c	4,4'-DDT	0.00059	1.22E-06	2.30E-05	EPA	20	BAF/BCF	0.00022	OR
nc	Acanaphthene	NC	11	110	EPA	10	RSC: BAF/BCF	88	OR
nc	Acrrolein	780	48	3.1	WA2016	0.02	EPA used new lower BAF	0.93	OR
c	Acrylonitrile	0.98	0.85	0.026	WA2016	0.03	EPA used new lower BAF	0.025	OR
c	Aldrin	0.00014	4.14E-08	5.90E-06	EPA	140	BAF/BCF	0.000005	OR
c	alpha-BHC	0.913	4.84E-05	5.90E-04	EPA	12	BAF/BCF	0.00040	OR
nc	alpha-Ethionan	2	2.7	10	EPA	4	RSC	8.2	OR
nc	Anthracene	110,000	48	4,600	EPA	102	RSC: BAF/BCF	4000	OR
nc	Arsimony	4,300	37	180	EPA	5	RSC	64	OR
c	Arsenic	0.14	0.0069	10	EPA	1684	WA used Drinking water MCL	1.0	OR
cn	Asbestos	NC							
c	Benzene	71	1.7	1.6	WA2016	0.96	Same	1.4	OR
c	Benzidine	0.00054	0.0012	2.30E-05	WA2016	0.02	EPA used new lower BAF	0.00002	OR
c	Benzolanthracene	0.031	1.61E-04	2.10E-02	EPA	131	BAF/BCF	0.0018	OR
c	Benzobiphenylene	0.031	1.61E-05	2.10E-03	EPA	131	BAF/BCF	0.0019	OR
c	Benzobiphenylene	0.031	1.61E-04	2.10E-02	EPA	131	BAF/BCF	0.0018	OR
c	Benzokifluoranthene	0.031	1.61E-03	2.10E-01	EPA	131	BAF/BCF	0.0018	OR
c	beta-BHC	0.046	0.0014	0.002	EPA	1	BAF/BCF	0.0017	OR
nc	Beta-Ethionan	2	4.2	10	EPA	2	RSC	8.9	OR
nc	Bis(2-chloro-1-methylethyl)ether	170,000	369	7,400	EPA	20	BAF/BCF	6500	OR
c	Bis(2-chloroethyl)ether	1.4	0.24	0.06	WA2016	0.25	EPA used new lower BAF	0.053	OR
c	Bis(2-ethylhexyl)phthalate	5.8	0.046	0.06	EPA	5	BAF/BCF	0.22	OR
c	Bromoform	380	12	27	EPA	2	BAF/BCF	14	OR
c	Butylbenzyl Phthalate	NC	0.013	0.58	EPA	46	BAF/BCF	190	WA
c	Carbon Tetrachloride	4.4	0.47	0.95	WA2016	0.75	EPA used new lower BAF	0.16	OR
c	Chlordane	0.00099	2.18E-05	9.30E-05	EPA	4	BAF/BCF	8.10E-05	OR
nc	Chlorobenzenes	21,000	63	880	EPA	11	RSC: BAF/BCF	180	OR
nc	Chlorodibromomethane	34	2	3	EPA	1.50	RSC	1.3	OR
nc	Chloroform	470	241	1,300	EPA	5	RSC	1300	OR
c	Chrysene	0.023	0.010	3.1	EPA	131	BAF/BCF	0.0018	OR
nc	Copper	NC							



Marine	Organisms Only	PCR = 6.2 g/day 1 x 10 <sup>-6</sup>	PCR = 175 g/day 1 x 10 <sup>-5</sup>	PCR = 175 g/day 1 x 10 <sup>-5</sup>				PCR = 175 g/day 1 x 10 <sup>-5</sup>	
Cancer / Noncancer	MARINE	(NTR)	EPA 2015 WA	WA 2016 Proposed	Lower Value	Ratio WA 2016: EPA 2015 WA	Main Reason for Difference	OR Approved	Lower Value (OR approved or WA proposed)
c	Dibenz(a,h)anthracene	0.031	1.61E-05	2.10E-03	EPA	131	BAF/BCF	0.0018	OR
c	Dichlorobromomethane	22	2.6	3.6	EPA	1	Same	1.7	OR
c	Dieldrin	0.00014	6.97E-08	5.10E-06	EPA	88	BAF/BCF	5.40E-06	OR
c	Diethyl Phthalate	120,000	95	5,000	EPA	62	RSC; BAF/BCF	4400	OR
nc	Dimethyl Phthalate	2,900,000	229	130,000	EPA	569	RSC; BAF/BCF	110000	OR
nc	Di-n-butyl Phthalate	12,000	3.2	510	EPA	162	RSC; BAF/BCF	450	OR
nc	Endosulfan Sulfone	2	3.9	10	EPA	3	RSC; BAF/BCF	8.9	OR
nc	Endrin	3.81	0.0024	0.035	EPA	15	RSC; BAF/BCF	0.024	OR
nc	Endrin Aldohyde	0.81	0.13	0.035	WA2016	0.27	EPA used new lower BAF	0.03	OR
nc	Ethylbenzene	25,000	13	270	EPA	21	RSC; BAF/BCF	210	OR
nc	Fluoranthene	370	2.4	18	EPA	7	RSC	14	OR
nc	Fluorene	14,000	5.2	610	EPA	118	RSC; BAF/BCF	530	OR
nc	gamma-BHC (Lindane)	0.063	0.43	17	EPA	40	RSC; BAF/BCF	0.18	OR
c	Heptachlor	0.00021	3.38E-07	1.00E-05	EPA	30	BAF/BCF	7.90E-06	OR
c	Heptachlor Epoxide	0.00011	2.37E-06	7.40E-06	EPA	3	BAF/BCF	3.90E-06	OR
c	Hexachlorobenzene	0.00077	4.98E-06	5.20E-05	EPA	10	BAF/BCF	2.90E-05	OR
c	Hexachlorocyclopentadiene	83	0.01	4.1	EPA	395	BAF/BCF	1.8	OR
nc	Hexachlorocyclopentadiene	17,000	0.42	630	EPA	1493	RSC; BAF/BCF	1.0	OR
c	Hexachloronaphthalene	8.9	0.019	3.13	EPA	7	BAF/BCF	0.33	WA
c	Indeno(1,2,3-cd)pyrene	0.031	1.61E-04	2.10E-02	EPA	131	BAF/BCF	0.0018	OR
c	Isophorone	800	201	110	WA2016	0.53	EPA used new lower BAF	96	OR
nc	Methyl Bromide	4,000	1,306	2,400	EPA	2	RSC	150	OR
nc	Methyl mercury		0.030				WA didn't adopt		
c	Methylene Chloride	1,800	142	260	EPA	2	RSC	59	OR
nc	Nickel	4,000	38	190	EPA	5	RSC	170	OR
nc	Nitrobenzene	1,900	59	320	EPA	5	RSC	59	OR
c	Nitrosodimethylamine, N-	8.1	0.34	0.34	same	1	Same	0.046	OR
c	Nitrosodi-n-Propylamine, N-	NC	0.068	0.068	same	1	Same	0.051	OR
c	Nitrosodiphenylamine, N-	18	0.69	0.69	same	1	Same	0.5	OR
c	Pentachlorophenol	8.2	0.0022	0.1	EPA	46	BAF/BCF	0.3	WA
nc	Phenol	4,600,000	28,872	200,000	EPA	7	RSC	85000	OR
c	Polychlorinated biphenyls	0.00017	7.13E-06	1.70E-04	EPA	23	WA calculated as non-carcinogen	6.40E-06	OR
nc	Pyrene	11,000	3.2	480	EPA	144	RSC; BAF/BCF	400	OR
nc	Selenium	NC	95	480	EPA	5	RSC	430	OR
c	Tetrachloroethylene	8.85	3	7.1	EPA	2	BAF/BCF	0.33	OR
nc	Thallium	6.3	0.05	0.27	EPA	5	RSC	0.047	OR
nc	Toluene	200,000	52	410	EPA	8	RSC	1500	WA
c	Toxaphene	0.00078	6.80E-05	1.20E-05	WA2016	0.49	EPA used new lower BAF	2.80E-05	OR
c	Trichloroethylene	61	0.7	0.66	EPA	1	BAF/BCF	3	WA
c	Vinyl Chloride	525	0.18	0.28	EPA	1	Same	0.24	OR
nc	Zinc	NC	884	2,900	EPA	5	RSC	2600	OR
Marine									
	WA Proposed Criteria less stringent than NTR								
	Both WA and EPA Proposed Criteria less stringent than NTR								

## Technical Summary Tally (NWIFC)

WA State proposal as compared to		Freshwater # of regulated chemicals (out of 98)	Marine # regulated chemicals (95)	Comments
<b>Existing standard</b> (NTR)	Increase in protectiveness (Lower chemical criteria)	58	66	The state's proposal shows improvement for the majority of chemicals compared to existing standards, but EPA's proposal is more protective than existing standards for 93 chemicals in the freshwater criteria, and 84 chemicals in the marine water criteria. EPA's proposal also goes substantially further in increasing the level of protection.
	Remain the same	1	1	PCB's remain the same as existing standard in the state proposal because Ecology applied a no-backsliding policy.
	Decrease in protectiveness	24	11	State proposes to change Arsenic to Safe Drinking Water Act standard. Other decreases from existing standards are largely due to changes in toxicity factors. Dioxin is also a major concern.
	Other differences			State will add approximately 10 additional chemicals to the standards.
<b>EPA Proposal</b>  99 regulated chemicals	State is more protective (lower criteria) than EPA	13	13	State proposal is more protective than EPA proposal for 13 chemicals.
	State and EPA are the same	10	10	
	State is less protective than EPA	76	78	State proposal is less protective than EPA for approximately 80% of chemicals. Major differences are in the challenging chemicals: arsenic, PCBs, and dioxins. Most of the other differences between EPA and the state proposal is due to the state's use of older bio-concentration factors, and relative source contribution.

	Other differences			EPA proposes to regulate methyl mercury. State has deferred for future consideration without a timeline.
<b>Oregon's standards</b>	WA is more protective than Oregon	17	10	Oregon's criteria, approved by EPA in 2011, are more protective for 80 to 90 % of regulated chemicals than WA.
	WA less protective	77	83	Oregon used a FCR of 175 g/day and cancer risk of $10^{-6}$ but they used different values for body weight, drinking water, bioconcentration, toxicity factors, and relative source contributions. Oregon also used a different approach for arsenic, which falls between the EPA and Washington proposals, but is much more protective than WA.

## C. Fish Consumption Rates—Description of studies and definition of terms

All documents described or cited are incorporated by reference.

### 1. Definitions of terms:

As used herein, the following terms are applied:

**Heritage Rates** “refer to the rates of fish intake consonant with traditional tribal practices, prior to contact with European settlers” and assume rates that were “uncontaminated and available” and not subject to suppression.<sup>341</sup> The term Heritage Rates, used herein, represents the same definition as used by Donatuto, Harper and O’Neill<sup>342</sup> and submitted in comments to the state of Idaho related to state rule-making for Human Health Criteria (2014). (Donatuto et al. use the term “Aspirational Rates” to refer to fish consumption rates that are higher than what is currently consumed. The term aspirational rates is intended to recognize that present-day fish consumption may be suppressed due to resource availability, resource contamination, lack of access to fishing areas and other factors that have resulted in a reduction in consumption from heritage rates. Aspirational rates are not interchangeable with heritage rates; aspirational rates may be established at a level equal to heritage rates, or set at a lower level.)

**Contemporary** rates of tribal fish consumption, as used in this document, refers to fish consumption that has occurred in recent history, i.e. since the early 1990s when tribes began conducting dietary surveys to document modern consumption. The term “contemporary” is a temporal term and describes consumption rates identified as snapshots in time, generally through a similar methodology.<sup>343</sup>

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<sup>341</sup> Catherine O’Neill, Professor of Law, Seattle University School of Law, Comments to IDEQ, *Risk, Human Health, and Water Quality Standards* (Jan. 20, 2015).

<sup>342</sup> Donatuto, J., B. Harper and C. O’Neill; February 14, 2014. “Heritage, Subsistence, and Aspirational Fish Consumption Rates: Comments on Usage.

<sup>343</sup> It should be noted that some tribes (e.g. the Lummi Nation) have conducted studies that retroactively estimate fish consumption rates during the peak of salmon harvest levels in the 1980’s. This was an effort to quantify some suppression factors, but such analysis is not characterized as heritage, aspirational, or contemporary.

**Traditional** refers to harvest and consumption practices, similar to ancestral use of fisheries resources, and is not a rate.

**Subsistence** does not refer to a rate and may be used in two ways in this document: 1) as used by EPA and the Department of Ecology in reference to water quality criteria to describe personal use by sports fishers, economically disadvantaged individuals, and other groups; and 2) as used in treaty tribal fisheries management to describe harvest that is not sold commercially but is obtained for the personal use of the treaty tribal fisher. The intent must be inferred from context.

Subsistence is described by Donatuto et al. as, “a term that is inconsistently used and understood.” They point out that use of the word “subsistence,” as it is applied to fish consumption rates, differs from the way that the word is commonly understood in colloquial use. They also point out that subsistence is used by the Environmental Protection Agency in various guidance documents as described below.

- a) The Department of Ecology uses the term “subsistence” in the context of EPA usage in Ambient Water Quality Criteria. The EPA, as described by Donatuto, et al., uses the term, “in a more generic sense, i.e., to refer to individuals who simply eat a lot of fish, for whatever reason” rather than specific reference to tribal fishers and consumers. As described by EPA, the term subsistence would encompass both subsistence fishing by treaty tribal harvesters and recreational harvest by non-treaty fishers.
- b) In the context of treaty-reserved fishing rights held by tribes, tribal fisheries managers typically use subsistence to differentiate treaty tribal catch for personal use from commercial, ceremonial, or recreational fisheries, as follows<sup>344</sup>:

Commercial – fish/shellfish caught by a licensed fisher (treaty or non-treaty) and sold to someone (tourist, local store, wholesale buyer, etc.)

Subsistence – treaty harvest for personal use and the fisher’s family

Ceremonial – treaty harvest that takes place for a culturally important event (funeral, marriage, annual event, etc.)

Recreational – non-treaty sport harvest for personal use (no sales)

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<sup>344</sup> Chitwood, S. 2015. Pers. Comm. with the Natural Resources Director of the Jamestown S’Klallam Tribe.

The term “sustenance” was used by the Department of the Interior in January 2015 related to Maine’s water quality standards and tribal fishing rights in Maine, and stated that, “it is reasonable to include that the term encompasses, at a minimum, the notion of tribal members taking fish to nourish and sustain themselves.”<sup>345</sup> By this description, the term sustenance is similar to “subsistence” in the context of treaty-reserved fishing rights in the Pacific Northwest. However the circumstances in Maine differ from Washington State, and the terms cannot necessarily be used interchangeably.

**Other terms and usage:**

“Traditional” refers to a body of fish harvest and consumption practices. In general, traditional fishing families rely extensively on fisheries resource consumption similar to ancestral practices. Traditional fish consuming families are generally high consumers, and may represent consumers who eat parts of the fish that may be discarded by other users (and thereby susceptible to exposure to toxic chemicals at a different level).

**Fish Consumption Rates in Tribal Water Quality Standards:** Several tribes have developed their own set of human health criteria in water quality standards. The fish consumption rates adopted in tribal standards vary widely depending on the timing, circumstances, and evidence that was available at the point of tribal approval and subsequent EPA approval. Some tribes adopted the existing National Toxics Rule standards as a default value, or other national criteria in effect at the time. Other tribes have adopted individualized standards based on contemporary dietary surveys, heritage rates, or other information. Tribal standards are in various stages of development, approval by EPA, and revision.

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<sup>345</sup> U.S. Department of the Interior, Office of the Solicitor. January 30, 2015. Letter from Hilary C. Tomkins to Avi Garbow, General Counsel, U.S. Environmental Protection Agency. RE: Maine’s WQS and Tribal Fishing Rights of Maine Tribes.

## 2. Tribal Fish Consumption Studies

Comprehensive tribal fish consumption studies have been regionally available since 1994. A summary of tribal fish consumption rates is listed in the following table, and followed by a short description of Pacific Northwest tribal fish consumption studies. (Values reported for these surveys by Ecology and others may vary slightly depending on whether original results are reported, or the re-analysis of data using different methods used by Polissar, et al.)

Table of fish consumption rate surveys from Tribal FCR studies:

<b>Tribal Survey and year published</b>	<b>Type of Fish</b>	<b>Mean</b>	<b>Median</b>	<b>75<sup>th</sup> percentile</b>	<b>90<sup>th</sup> percentile</b>	<b>95<sup>th</sup> percentile</b>	<b>99<sup>th</sup> percentile</b>
Columbia River Tribes 1994	Finfish (A, F)	63	40	60	113	176	389
Tulalip Tribe 1996	Finfish (A, E) Shellfish	72	45	85	186	244	312
Squaxin Island Tribe 1996 (upper value) and EPA 2013 reanalysis (lower value)	Finfish (A, E) Shellfish	73	43	-	193	247	-
		95			283	318	
Suquamish Tribe 2000	All seafood	214	132	284	489	797	
Lummi Nation 2013	Finfish (A, E) Shellfish	383	314	-	800	918	-
Nez Perce Tribe (Polissar, et al. 2015)		123.4	70.5	-	270.1	437.4	
Asian/Pacific Islanders 1999*	Finfish (A, E) Shellfish	117	78	139	236	306	-
A=Anadromous, F=Freshwater, E=Estuarine. All values expressed in grams per day. *Also included for comparison is a study of seafood consumption by Asian and Pacific Islander communities in King County. (Sechena, et al., 1999)							

## Annotated References: Tribal Studies:

- CRITFC (Columbia River Inter-Tribal Fish Commission), 1994. A fish consumption survey of the Umatilla, Nez Perce, Yakama and Warm Springs Tribes of the Columbia River Basin. Columbia River Inter-Tribal Fish Commission Report reference #94-03, Portland, Oregon.

The CRITFC study was used as a major fish consumption reference in the development of the water quality standards in Oregon, following the rejection of Oregon's proposed FCR standard of 17.5 grams per day by the EPA. The CRITFC study documented a FCR of 176 g/day at the 95<sup>th</sup> percentile of respondents in the study. In the interest of protecting more tribal consumers, and the recognition that fisheries were severely suppressed at the time, Columbia River tribes advocated for the use of the 99<sup>th</sup> percentile value, or 389 g/day, during the development of the standards, but a final criterion of 175 was adopted by OR Department of Environmental Quality and approved by EPA in 2011. The difference between the study value of 176 g/day and the standard at 175 g/day is attributable to rounding by OR DEQ.

*"DEQ determined that a fish consumption rate of 175 g/d is a reasonable and protective fish consumption rate to use as the basis for Oregon's human health criteria. A fish consumption rate of 175 g/d represents approximately 6.2 ounces per day (or approximately 23 8-oz fish or shellfish meals per month). This rate represents the 95<sup>th</sup> percentile value from the Columbia River Inter-Tribal Fish Commission study and is within the range of the 90<sup>th</sup> percentile values from various studies from the Northwest...." (Oregon DEQ, 2011. p 9)<sup>346</sup>*

In response to public questions about the validity of tribal data and requests to have individual response data released, CRITFC submitted a letter to the Department of Ecology in 2012 describing the study design, implementation, and review in detail.<sup>347</sup>

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<sup>346</sup> Oregon Department of Environmental Quality, 2011. Human health criteria final issue paper. Matzke, A., D. Sturdevant and J. Wiegler.

<sup>347</sup> Columbia River Inter-Tribal Fish Commission; March 19, 2012. Letter from Executive Director Babbist Paul Lumley to Ecology Director Ted Sturdevant. Published by the WA Department of Ecology as Attachment B to the Fish Consumption Rate Technical Support Document, Version 2.0 in August, 2012.



- Toy, K.A., Polissar, N.L., Liao, S., and Mittelstaedt, G.D. 1996. A Fish Consumption Survey of the Tulalip and Squaxin Island Tribes of the Puget Sound Region. Tulalip Tribes, Department of Environment.

Puget Sound tribes conducted dietary surveys beginning in 1996, with the involvement of EPA the University of Washington, and other advisors in the field of public health. The 1996 assessment of the Tulalip and Squaxin Island tribal fish consumption included finfish and shellfish, and estimated an FCR of 244-247 at the 95<sup>th</sup> percentile.

- U.S. Environmental Protection Agency (EPA). (2013) Reanalysis of fish and shellfish consumption data for the Tulalip and Squaxin Island Tribes of the Puget Sound Region: Consumption Rates for Consumers Only. National Center for Environmental Assessment, Washington, DC; EPA/600/R-06/080F.

US EPA worked with the earlier data for Tulalip and Squaxin Island Tribes to remove non-consumers from the estimated fish consumption rate, as inclusion of non-consumers would inappropriately skew the FCR lower, thereby underestimating the potential risk to fish consumers. The FCR for the Squaxin Island Tribe at the 95<sup>th</sup> percentile for consumers was estimated at 318 g/day (the earlier estimate including non-consumers was 247 g/day).

EPA and the Squaxin Island Tribe further analyzed the data to assess differences in consumption per body weight among adult males, females, and children. They found that children consumed fish at a rate almost 3 times that of adult males.

- Suquamish Tribe, 2000. Fish Consumption Survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region. August 2000.

The Suquamish survey was funded by the Agency for Toxic Substances and Disease Registry (ATSDR) through a grant to the Washington State Department of Health. The Suquamish Tribe was designated as the study manager and was the co-principal investigator with DOH in all aspects of the study. Technical peer reviewers and consultants included staff from DOH, Ecology, EPA, the University of Washington, and the Fred Hutchinson Cancer Research Institute.

Suquamish data indicated substantially higher fish consumption rates than the earlier studies, with a mean consumption rate of 214 g/day and a 90<sup>th</sup> percentile value of 489. The Suquamish analysis was referenced by the WA Department of Health in 2006, indicating that high-end fish consumers from the tribe would exceed PCB health quotients in Puget Sound Chinook and coho salmon.

- Lummi Natural Resources Department, Water Resources Division. 2012. Lummi Nation Seafood Consumption Study. (J. Freimund, M. Lange and C. Dolphin; August 31, 2012)

The Lummi Seafood Consumption Study consisted of recall interviews to assess 1985 consumption levels. The use of this technique was intended to identify fish consumption rates before modern salmon fishing was suppressed by the curtailment of US fisheries and the listing of some Puget Sound salmon as threatened species in the late 1990's and 2000's.

The Lummi survey identified a mean FCR for adult male respondents of 383 grams per day, and values of 800 and 918 g/day for the 90<sup>th</sup> and 95<sup>th</sup> percentiles, respectively.

- Colville Confederated Tribes:  
Westat, 2012. Upper Columbia River Site Remedial Investigation and Feasibility Study: Tribal Consumption and Resource Use Survey. Final Report.  
[http://www.epa.gov/region10/pdf/sites/ucr/tribal\\_consumption\\_resource\\_use\\_survey\\_final\\_report\\_june2012.pdf](http://www.epa.gov/region10/pdf/sites/ucr/tribal_consumption_resource_use_survey_final_report_june2012.pdf)

The study of the Colville Confederated Tribes was a comprehensive human health risk assessment associated with a settlement agreement between Teck Cominco Metals, Ltd., US Dept. of Justice, and US Environmental Protection Agency. The purpose of the study was to analyze human health risk at the Upper Columbia River remedial site for both dietary and non-dietary use of resources. A FCR in a comparable data format to the other tribal studies is not available.

- Nez Perce Tribe:  
Polissar, N.L., Salisbury, A., Ridolfi, C., Calahan, K., Neradilek, M., Hippe, D.S., and W.H. Beckley for The Mountain-Whisper-Light-Statistics, Pacific Market Research, and Ridolfi Inc. September 30, 2015. A Fish Consumption Survey of the Nez Perce Tribe. Final draft for Idaho DEQ.

The Nez Perce study was conducted as part of a larger fish consumption survey of federally recognized tribes in Idaho, initiated by the US EPA. Volume I presents information on heritage fish consumption by the Nez Perce Tribe. Volume II describes the methods and results of a current fish consumption survey.

- Harper, B.L. and Walker, D.E. 2015. "Columbia Basin Heritage Fish Consumption Rates." *Human Ecology* (2015) 43: 237-245.  
This paper looked at two approaches for estimating heritage fish consumption rates in the Columbia Basin using dietary reconstruction, and evidence of abundance, harvest and consumption rates. The two approaches support a FCR of 620 to 725 g/day as the average heritage rate for the Columbia River mainstem.
- Harper, B.L. and Walker, D.E. 2015. "Comparison of Contemporary and Heritage Fish Consumption Rates in the Columbia River Basin." *Human Ecology* (2015) 43: 225-236.  
This paper provides an overview of the contemporary and heritage fish consumption rates relevant to the Pacific Northwest, and notes that the selection of an appropriate FCR will depend on the derivation and context.
- Additional references on regional fish consumption studies:
  - i. Sechena, R., C.Nakano, S.Liao, N.Polissar, R.Lorenzana, S.Truong, and R.Fenske. "Asian and Pacific Islander Seafood Consumption Study in King County, Washington." EPA 910/R-99-003. May 1999.  
[http://www.epa.gov/region10/pdf/asian\\_pacific\\_islander\\_seafood\\_consumption\\_1999.pdf](http://www.epa.gov/region10/pdf/asian_pacific_islander_seafood_consumption_1999.pdf)
  - ii. Oregon Department of Environmental Quality; 2011. Human Health Criteria Final Issue Paper; Toxics Rulemaking 2008-2011. (A. Matzke, D. Sturdevant, and J. Wigal; May 24, 2011).
  - iii. McCormack, C., 2011. Fish Consumption Rate Report: Brief Overview and Issues for Consideration. Presentation to the Washington Department of Ecology Technical Workshop on Fish Consumption, December 12, 2011.  
[http://www.ecy.wa.gov/toxics/docs/20111212\\_fishworkshop\\_mccormack.pdf](http://www.ecy.wa.gov/toxics/docs/20111212_fishworkshop_mccormack.pdf), [http://www.ecy.wa.gov/toxics/fish\\_publicinvolvement.html](http://www.ecy.wa.gov/toxics/fish_publicinvolvement.html)

### 3. Ecology's Technical Support Document, Supplements, and Comments

- a) The Washington Department of Ecology recommended a default fish consumption rate in the range of 157 to 267 g/day based on a detailed review of available scientific studies.

Ecology published a Technical Support Document in September 2011 as a comprehensive overview of regional fish consumption data in Washington. Ecology had indicated to tribes and EPA in 2010 that they intended to complete an analysis of fish consumption rates in the context of setting Sediment Management Standards—information which would subsequently be transferrable to the development of Water Quality Standards. Ecology personnel from the Toxics Cleanup Program undertook the analysis of regional fish consumption data and published the Technical Support Document in September 2011, which included the following preliminary recommendation:

*“Ecology has concluded that available scientific studies support the use of a default fish consumption rate in the range of 157 to 267 grams per day (g/day). The preliminary recommendation of this report is that default fish consumption rates should be within this range for state regulatory purposes.”*

Ecology arrived at this range by conducting a composite statistical analysis of the tribal and Asian/Pacific Islander data that met Ecology's requirements for scientific validity. The recommendation for the composite range represented values from the 80<sup>th</sup> to the 95<sup>th</sup> percentiles.

- b) Comments on the 2011 Technical Support Document

Comments from the University of Washington School of Public Health submitted during the public comment period stated that the September 2011 version of the FCR Technical Support Document was, *“a robust, scientific-based assessment that is both clear and transparent.”*<sup>348</sup>

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<sup>348</sup> Faustman, E.M. January 18, 2012. Letter from the Director of the Institute for Risk Analysis and Risk Communication in the Department of Environmental and Occupational Health Sciences, University of Washington to M. Hankins, Toxics Cleanup Program, WA Department of Ecology

Ten tribes, two tribal consortiums, and the Center for Indian Law and Policy (Seattle University School of Law) commented on the 2011 Technical Support Document. (see attached folder: Comments early 2012) Comments included the following points:

- NWIFC comments indicated that many tribes could support an FCR at or above the high end of the recommended range of 157-267 g/day as a step forward, but noted that many tribes have documented higher rates and that the low end of the range was below mean consumption levels for some tribes. NWIFC also stated that 175 g/day is a low rate, and described contemporary rates at approximately 500 grams per day and heritage FCRs of 1,000 g/day.<sup>349</sup>
- Comments from Swinomish, Squaxin Island, and CRITFC all discussed the need to factor in the suppression of treaty fishing opportunities and fisheries resources.
- Lower Elwha Klallam and CRITFC described the uptake of toxic chemicals in salmon throughout their life cycle and the need to include salmon in an FCR. The need to include salmon was reiterated in most tribal comments.
- The Spokane Tribe indicated that they were waiting for EPA approval of a fish consumption rate of 865 grams per day in tribal water quality standards (since approved—see references for letter).
- The Lummi Nation stated that the use of an 80<sup>th</sup> percentile value was too low and that the lower bound should be at least the 90<sup>th</sup> percentile, and that 95<sup>th</sup> was typical. The Lummi comments also spoke to the need to include anadromous fish in the rate, and described their seafood consumption study, then in progress.
- Suquamish comments indicated that the upper bound of the recommended range was lower than the 75<sup>th</sup> percentile of the FCR study

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<sup>349</sup>NWIFC; January 3, 2012. Letter from Chairman Billy Frank, Jr. to WA Department of Ecology Director Sturdevant re: comments on fish consumption rates technical support document.

of Suquamish tribal members and recommended that Ecology use 90<sup>th</sup> to 95<sup>th</sup> percentile values.

- Jamestown S’Klallam indicated that they did not have a tribal-specific fish consumption study at the time, but described examples of suppression from bacterial contamination of shellfish in Dungeness Bay and habitat degradation in the Dungeness River that would affect a tribally-derived rate.
- Colville Confederated Tribes described their health risk assessment and indicated that preliminary results showed that over 83% of tribal members actively consumed local sources of fish.
- The Kalispel Tribe commented that fish consumption rates and other human health criteria should be established independently from economic considerations, in order to protect human health.
- The Yakama Nation stated that *“Asking us to accept health risk at the 90<sup>th</sup> percentile is the same as asking us to accept that over 1000 Yakama tribal members will be subjected to increased health risk because they choose to eat a traditional diet.”*
- The Center for Indian Law and Policy at the Seattle University School of Law summarized treaty fishing rights, historical consumption practices, suppression factors that have reduced fish consumption, and the need to include salmon.

Washington Department of Health personnel provided a presentation at the Environmental Law Education Center conference in June, 2012, endorsing a fish consumption rate of 175 g/day in Washington State standards at a minimum.<sup>350</sup>

At the request of industry (described previously), Ecology withdrew the 2011 Technical Support Document in July of 2012. Ecology did not dispute the findings of the first version of the document, but indicated that they had concluded that the numerical recommendation was a policy decision requiring

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<sup>350</sup> McBride, D.; December 20, 2012. Email to Craig McCormack, Washington Department of Ecology re: Fish Consumption.

further discussion.<sup>351</sup> A preliminary draft of Technical Support Document Version 2.0 was issued in August 2012 and a Final in January 2013.

During preparation of the second version of the document, staff from the WA Department of Health commented that they were concerned about the removal of the recommended range from the first version of the document:

*"I am concerned that the consumption rates cited as recommendations in the previous draft were removed from the current document. DOH believes that there are ample well conducted, scientifically defensible studies available as described in the TSD to establish a range of consumption rates. DOH has previously commented to Ecology that a fish consumption rate should, at a minimum, be on par with Oregon's adopted value of 175 grams per day. DOH also recommended that a range of rates be considered, with the low end of 175 grams per day, along with higher rates associated with many Puget Sound Tribes as well as ethnic populations as detailed in the document. DOH would also suggest that Ecology determine whether the fish consumption rate of 500 pounds per capita per year (which equates to 620 grams per day) as cited in the 1974 Boldt decision on treaty rights is a legally enforceable rate."<sup>352</sup>*

c) Supplements to the Technical Support Document.

Comments on the Technical Support Document Version 1 prompted the Department of Ecology to prepare supplemental information: estimating annual fish consumption rates using short term dietary surveys, recreational fish consumption rates, health benefits and risk of consuming fish and shellfish, chemical contaminants in dietary protein sources, and salmon life history and chemical body burdens.<sup>353</sup>

Ecology also commissioned a statistical analysis of national Washington State fish consumption data, published as a draft in September 2012 and a final in September, 2014.<sup>354</sup> The report by Polissar, et al. compared NHANES data to

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<sup>351</sup> WA Department of Ecology; July 16, 2012. Open letter from Director Ted Sturdevant.

<sup>352</sup> McBride, D. Washington Department of Health comments to M. Hankins, Washington Department of Ecology via email, quoted in internal memo summary August 17, 2012.

<sup>353</sup> WA Department of Ecology; July 20, 2012. Supplemental information to support the fish consumption rate technical support document.

<sup>354</sup> Polissar, N.L., M. Neradilek, A.Y. Aravkin, P. Danaher, and J.Kalat. September 7, 2014. Statistical Analysis of National and Washington State Fish Consumption Data. Final. Mountain-Whisper-Light Statistics. Seattle, WA.

methods utilized by the National Cancer Institute and the EPA's Exposure Factors Handbook. The study commissioned by Ecology also found that, "Among the consumption rates for **locally harvested fish**, the Native American tribes have the highest consumption rates." <sup>355</sup> (emphasis added) We further note that the WA Department of Ecology cited the 2012 version on page 19 of the 2016 Key Decisions document, but did not cite the final 2014 version of the report. We have included both versions in the electronic attachments.

d) Additional documents:

- Washington Department of Ecology; September 2011. Fish Consumption Rates: Technical Support Document—A Review of Data and Information About Fish Consumption in Washington. Publication no. 11-09-050. Washington Department of Ecology Toxics Cleanup Program. Olympia, WA. (Note that this later became known as Technical Support Document Version 1.0)

Also incorporated are documents referenced in the Technical Support Document Version 1.0, all comments received during the public comment period, Ecology's publication No. 12-09-055 "Response to Comments on Fish Consumption Issues," and all attachments and supplements issued by the Department of Ecology associated with the Technical Support Document, Version 1.0, whether draft or final.

- Washington Department of Ecology; January 2013. Fish Consumption Rates: Technical Support Document—A Review of Data and Information About Fish Consumption in Washington, Version 2.0, Final. Publication no. 12-09-058. Washington Department of Ecology Toxics Cleanup Program. Olympia, WA.

Also incorporated is the Public Review Draft of Version 2.0 issued in August, 2012, all comments received during the public comment period, and all references, attachments and supplements issued by the Department of Ecology associated with the Technical Support Document, Version 2.0.



#### 4. FCR studies from Idaho rule making.

During rule development for water quality standards in Idaho, a series of fish consumption analyses were prepared under contract with EPA. Table 24 is included here comparing contemporary Idaho results and other regional studies. From: Polissar, N.L., Salisbury, A., Ridolfi, C., Calahan, K., Neradilek, M., Hippe, D.S., and W.H. Beckley for The Mountain-Whisper-Light-Statistics, Pacific Market Research, and Ridolfi Inc. September 30, 2015. A Fish Consumption Survey of the Nez Perce Tribe. Final draft for Idaho DEQ.

<https://www.deq.idaho.gov/media/60177353/58-0102-1201-fish-consumption-survey-nez-perce-tribe.pdf>

**Table 24. Total FCRs (g/day) of adults in Pacific Northwest Tribes (with consumption rates available) and the U.S. general population. Consumers only.**

Population	No. of Consumers*	Percentiles			
		Mean	50%	90%	95%
Nez Perce Tribe, FFQ rates, Group 1	451	123.4	70.5	270.1	437.4
Nez Perce Tribe, NCI method, Group 1	451	75.0	49.5	173.2	232.1
Shoshone-Bannock Tribes, FFQ rates, Group 1	226	158.5	74.6	392.5	603.4
Shoshone-Bannock Tribes, NCI method, Group 1	226	34.5	14.9	94.5	140.9
Tulalip Tribes, FFQ rates	73	82.2	44.5	193.4	267.6
Squaxin Island Tribe, FFQ rates	117	83.7	44.5	205.8	280.2
Suquamish Tribe, FFQ rates	92	213.9	132.1	489.0	796.9
Columbia River Tribes, FFQ rates	464	63.2	40.5	130.0	194.0
USA, NCI method *	16,363	23.8	17.6	52.8	68.1

\*Adults  $\geq 21$  years old; includes both consumers and non-consumers. Data for populations outside of Idaho from CRTIFC, 1994 (Columbia River Tribes), The Suquamish Tribe, 2000, Toy et al, 1996 (Tulalip and Squaxin Island Tribes) and U.S. EPA, 2014 (USA).

## 5. Additional information about the presence of toxic chemicals in regional freshwater and marine aquatic species

WA Department of Ecology prepared a supplement document<sup>356</sup> in 2012 to evaluate the inclusion of fish and shellfish in the default fish consumption rate, then under consideration. The supplement focused on health benefits and risks of fish consumption, and the contaminant body burdens of regional salmonid species, including:

- Health Benefits and Risks of Consuming Fish and Shellfish
- Chemical Contaminants in Dietary Protein Sources
- Salmon Life History and Contaminant Body Burdens

The Ecology supplement cites numerous studies that document the uptake of toxic chemicals among salmon at various life stages within the jurisdictional waters of Washington, including freshwater, estuarine, and marine waters. In particular, studies by the WA Department of Fish and Wildlife document higher levels of persistent organic pollutants in Puget Sound resident Chinook (Chinook that spend their adult life cycle in the marine waters of Puget Sound rather than migrating to the north Pacific Ocean), indicating higher exposure in the inland waters of Puget Sound as compared to Chinook that originate in or migrate to other areas of the Pacific Northwest.<sup>357</sup>

Documents and presentations prepared by NOAA/National Marine Fisheries Service, the WA Department of Ecology, WA Department of Health, WA Department of Fish and Wildlife, Environment Canada, and the Puget Sound Ambient Monitoring Program describe chemical contamination in a wide range of fish, shellfish, and marine mammal species in Washington freshwater, estuarine, nearshore and coastal waters including Puget Sound and the Columbia River basin.<sup>358, 359, 360</sup> More recent studies confirm the uptake of contaminants in nearshore

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<sup>356</sup> Washington Department of Ecology, Toxics Cleanup Program; July 20, 2012. Supplemental Information to Support the Fish Consumption Rates Technical Support Document. Olympia, WA.

<sup>357</sup> O'Neill, S.M. and J. E. West, 2009. Marine Distribution, Life History Traits, and the Accumulation of Polychlorinated Biphenols in Chinook Salmon from Puget Sound, WA. Transactions of the American Fisheries Society 138:616-632, 2009. DOI: 10.1577/TO8-003.1

<sup>358</sup> West, James E. 2011. PCBs in Puget Sound's Food Web. Presentation to the Washington Department of Ecology Technical Fish Consumption Workshop on December 12, 2011 at the University of Washington, Seattle, WA. Accessed at: [http://www.ecy.wa.gov/toxics/docs/20111212\\_fishworkshop\\_west.pdf](http://www.ecy.wa.gov/toxics/docs/20111212_fishworkshop_west.pdf)  
[http://www.ecy.wa.gov/toxics/fish\\_publicinvolvement.html](http://www.ecy.wa.gov/toxics/fish_publicinvolvement.html)

<sup>359</sup> O'Neill, S.M., G.M. Ylitalo, J.E. West, J. Bolton, C.A. Sloan and M.M. Krahn. April, 2006. Regional patterns of persistent organic pollutants in five Pacific salmon species (*Onchorhynchus spp*) and their contribution to

areas.<sup>361, 362, 363</sup> In a recent study conducted by the Washington State Department of Fish and Wildlife, out-migrating Chinook and steelhead were shown to accumulate significant body burden of toxic pollutants within Washington's fresh and marine waters.<sup>364, 365</sup> Studies of pollutants in juvenile Chinook salmon in the Columbia River basin have also been published, similarly demonstrating accumulation of toxic body burdens of salmon in Washington waters.<sup>366</sup> Additionally, there are numerous studies regarding the presence of toxics in both finfish and shellfish within Washington's waters.<sup>367</sup>

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contamination levels in northern and southern resident killer whales (*Orcinus orca*). Extended abstract presented to the 2006 Southern Resident Killer Whale Symposium. Seattle, WA.

<sup>360</sup> Presentations at the 2014 Toxics Reduction Conference; Seattle, WA. November 17, 2014.

<sup>361</sup> West, J, Lansbury, J., O'Neil, S., and Marshall, A. March, 2011. Persistent Bioaccumulative and Toxic Contaminants in Pelagic Marine Fish Species from Puget Sound. Washington Department of Ecology Publication Number 11-10-003.

<sup>362</sup> O'Neill, S.M., J.E. West, and J.C. Hoeman. 1998. Spatial trends in the concentration of polychlorinated biphenyls (PCBs) in chinook (*Oncorhynchus tshawytscha*) and coho salmon (*O. kisutch*) in Puget Sound and factors affecting PCB accumulation: results from the Puget Sound Ambient Monitoring Program. Pages 312-328 in R. Strickland, editor. Puget Sound Research 1998 Conference Proceedings. Puget Sound Water Quality Action Team. Olympia, Washington.

<sup>363</sup> Sandie O'Neill, James West, Andrea Carey, Laurie Niewolny, Jennifer Lanksbury, Gina Ylitalo, and Lyndal Johnson, November 12, 2015. Toxic contaminants in outmigrant Chinook salmon from Puget Sound, Washington. Focus presentation for WRIA 9. Available at: [http://www.govlink.org/watersheds/9/committees/archive/1511/7-JimWest\\_WDFW\\_WRIA9\\_JuvenileChinookTalk.pdf](http://www.govlink.org/watersheds/9/committees/archive/1511/7-JimWest_WDFW_WRIA9_JuvenileChinookTalk.pdf)

<sup>364</sup> Sandie O'Neill, James West, Gina Ylitalo, Andrea Carey, Laurie Niewolny, Jennifer Lanksbury, and Lyndal Johnson, "Assessing the threat of toxic contaminants to early marine survival of Chinook salmon in the Salish Sea" (May 1, 2014). Salish Sea Ecosystem Conference. Paper 240. Available at <http://cedar.wvu.edu/ssec/2014ssec/Day2/240>

<sup>365</sup> West, James; March 9, 2015. Email re: Puget Sound toxic chemical uptake in salmon.

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## D. References and Source Documents

Also attached is a flash drive with source documents, to be hand carried to Ecology with a hard copy of the NWIFC comments.

### Folders:

- Economic Information
- FCR studies and analysis
- Health and Nutrition
- History of Delay in Washington
- Statutory information, guidance, EPA docs, EPA Maine docs
- Toxic chemicals in water and aquatic organisms
- Treaties and Treaty Fishing Rights
- Previous comments on rulemaking submitted by NWIFC:
  - NWIFC Comments March 23, 2015 RE Washington Water Quality standards proposed rule
  - NWIFC letter to EPA Oct 30, 2015, re request for rulemaking in 90 day time period
  - NWIFC Comments December 21, 2015 on the Proposed Federal Rule, Docket ID No. EPA-HQ-OW-2015-0174
- Additional reference materials
  - Ridolfi: Chemical comparison spreadsheets (excel file) same as Appendix B
  - PCB section supporting documents
  - Letter from Suquamish Tribe re Sediment Management Standards

### Note:

Any documents cited in the NWIFC comments are incorporated by reference, whether or not they are included on this flash drive.



# Northwest Indian Fisheries Commission

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July 10, 2017

The Honorable Scott Pruitt  
U.S. Environmental Protection Agency  
William Jefferson Clinton Building  
1200 Pennsylvania Avenue, N.W.  
Mail Code: 1101A  
Washington, DC 20460

**Re: Request to Deny Petition for Reconsideration of EPA's Revision of Certain Federal Water Quality Criteria Applicable to Washington, Filed February 21, 2017, by Northwest Pulp & Paper Association, et al.**

Dear Administrator Pruitt:

The Northwest Indian Fisheries Commission (NWIFC)<sup>1</sup> respectfully requests that EPA deny the above-referenced Petition to Reconsider its Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools, and to repeal its Final Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85417 (Nov. 28, 2016) (Petition), submitted under 5 U.S.C. § 533(e).<sup>2</sup> EPA's rule was the culmination of years of extensive public process at the state and federal levels involving a broad array of stakeholders. The resulting human health criteria (HHC) for Washington are scientifically based and legally defensible. They are accompanied by a suite of implementation tools, which provide generous timelines for compliance and other mechanisms for flexibility in achieving the updated water quality standards (WQS). Notably, the State of Washington itself is not seeking to disturb the EPA rule. As Washington State Department of Ecology Director Maia Bellon explained, the state is not asking EPA to revisit its rule because reconsideration "didn't seem like a good use of our time ... we want to focus our time on

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<sup>1</sup> The NWIFC member tribes are the Lummi, Nooksack, Swinomish, Upper Skagit, Sauk-Suiattle, Stillaguamish, Tulalip, Muckleshoot, Puyallup, Nisqually, Squaxin Island, Skokomish, Suquamish, Port Gamble S'Klallam, Jamestown S'Klallam, Lower Elwha Klallam, Makah, Quileute, Quinault, and Hoh, each of which holds fishing, hunting, and gathering rights in fresh and marine waters in western Washington, reserved in the 1854 and 1855 Stevens Treaties. NWIFC governing documents approved by each of the sovereign member tribes authorize NWIFC to prepare and submit these comments.

<sup>2</sup> Northwest Pulp & Paper Association, et al., Petition to Reconsider its Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools, and to Repeal its Final Revision of Certain Federal Water Quality Criteria Applicable to Washington (Feb. 21, 2017) [hereinafter Petition].

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making sure our ... NPDES permit holders ... are going to meet those standards into the future.”<sup>3</sup> EPA, too, should devote its time and resources to more fruitful efforts.

The Petition, moreover, largely rehashes arguments that have already been thoroughly vetted in public processes and carefully considered by EPA. EPA provided its reasons for accepting or rejecting these arguments, as appropriate, and documented its analysis in a voluminous record. Neither the science nor the law has changed. There is thus no warrant for EPA to reconsider its rule, as any new rulemaking that is grounded in the science would produce the same outcome.

Instead of moving backward and revisiting the rule, the EPA should allow the state and its local partners here in Washington – including the tribes – to move forward, and focus on innovative and effective implementation.

#### **I. The EPA Supported the State’s Effort to Update its Water Quality Standards, but Must Itself Uphold the Clean Water Act**

Both the state and the EPA have legal obligations under the Clean Water Act (CWA) as they work together to achieve its objective “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”<sup>4</sup> EPA provided technical and other support throughout the state of Washington’s effort to revise its outdated water quality standards, seeking to facilitate a state process that would result in approvable WQS. Contrary to the Petition’s characterization, the EPA’s relationship with the state has been one of support and deference, even as the state’s update was repeatedly delayed. However, the EPA could no longer ignore its own obligations under the CWA and was ultimately compelled by court order to act.

The CWA envisions frequent updates to state water quality standards, directing states at least every three years to review and, as appropriate, revise their WQS.<sup>5</sup> The CWA sets forth the touchstone for state efforts to this end: “[s]uch standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter.”<sup>6</sup> Among those purposes, the CWA sets forth a national goal of “water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water.”<sup>7</sup>

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<sup>3</sup> *Inside Olympia with Ecology Director Maia D. Bellon*, Inside Olympia (May 25, 2017)

<https://www.tvw.org/watch/?clientID=9375922947&eventID=2017051094&eventID=2017051094&autoStartStream=true>.

<sup>4</sup> Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. § 1251(a).

<sup>5</sup> 33 U.S.C. § 1313(c)(1). The CWA authorizes both states and tribes to administer WQS for waters under their respective jurisdictions. However, because these comments address a state’s (Washington’s) failure to submit fully approvable WQS and EPA’s issuance of certain human health criteria for that state, they will refer throughout to the duties of “states” under the CWA.

<sup>6</sup> 33 U.S.C. § 1313(c)(2).

<sup>7</sup> 33 U.S.C. § 1251(a)(2).

The EPA has interpreted this goal of “fishable” uses to “include, at a minimum, designated uses providing for the protection of aquatic communities and human health related to consumption of fish and shellfish.”<sup>8</sup> States may opt, however, to adopt more protective designated “uses” for their waters.

Under the CWA, water quality standards include HHC. These are health-based standards: at Congress’ direction, the touchstone for HHC is human health (rather than, for example, technological feasibility or cost-benefit balancing).<sup>9</sup> Because fish are the primary route of human exposure to PCBs, mercury, dioxins, and a host of toxic chemicals that are harmful to human health, HHC are set to ensure that people can safely consume fish, without also being exposed to contaminants in harmful amounts.

Pursuant to EPA guidance, agencies enlist quantitative risk assessment methods to set standards for both threshold and non-threshold contaminants. For threshold contaminants, standards are set so that contaminants don’t exceed levels that are safe for humans. For non-threshold contaminants, including carcinogens, exposure to any non-zero amount has the potential to cause cancer; standards are set so that contaminants don’t exceed a risk level determined to be “acceptable.” In either case, agencies then work with a risk assessment equation to calculate the concentration of each chemical that will be permitted in the waters that support fish. Agency risk assessors consider the toxicity of each contaminant together with human characteristics and practices that expose people to the contaminant in their environment: how much fish will people eat, over how long a period, and at what bodyweight? The fish consumption rate (FCR) is a key variable in this equation. For carcinogens, the cancer risk level deemed “acceptable” is another key variable.

The CWA enlists both states and the EPA in furthering its goals, in a relationship of “cooperative federalism.” CWA §304(a) directs EPA to assist states by requiring EPA to develop, publish, and revise from time to time, “criteria for water quality accurately reflecting the latest scientific knowledge [ ] on the kind and extent of all identifiable effects on health and welfare.”<sup>10</sup> For their part, states must “adopt criteria for all toxic pollutants ... for which [§304(a)] criteria have been published” by EPA whenever states review or revise their water quality standards or adopt new standards.<sup>11</sup> Importantly, the CWA gives EPA broad authority to oversee state efforts to this end, requiring states to submit WQS to EPA for approval or disapproval, and requiring EPA to issue WQS

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<sup>8</sup> Proposed Revision of Certain Federal Water Quality Criteria Applicable to Washington, 80 Fed. Reg. 55063, 55064 (Sept. 14, 2015); 40 C.F.R. § 131.2, § 131.4 (unless a state or tribe demonstrates that this use is not attainable, by means of a “use attainability analysis” pursuant to 40 C.F.R. § 131.10(j)).

<sup>9</sup> See, e.g., Michael A. Livermore & Richard L. Revesz, *Rethinking Health-Based Environmental Standards* 89 N.Y.U. L. REV. 1184, 1190 (2014) (“The major U.S. environmental statutes contain three principal approaches for determining the stringency of environmental protection: cost-benefit standards, feasibility standards, and health-based standards”).

<sup>10</sup> 33 U.S.C. § 1314(a)(1).

<sup>11</sup> 33 U.S.C. § 1313(c)(2)(B).

for a state if the state fails to make the necessary changes to obtain approval within the statutorily specified window.<sup>12</sup> In addition to working with states to develop water quality standards, the CWA independently directs EPA to issue water quality standards itself on states' behalf "in any case where the Administrator determines that a revised or new standard is necessary to meet the requirements of [the CWA]."<sup>13</sup>

Congress' impatience with the slow pace of states' work to control toxic contamination was well documented during the debate surrounding the 1987 amendments to the CWA; the resulting provisions for regular triennial revisions to state WQS reflect this concern.<sup>14</sup> Nonetheless, Washington failed to produce state WQS in the wake of the 1987 amendments, necessitating that its waters obtain coverage under the National Toxics Rule (NTR), which EPA was forced to promulgate in 1992 for those states that were unable to issue timely WQS on their own.<sup>15</sup> Although the State of Washington soon recognized the need to revise these NTR-based standards, its efforts stalled for years. All the while, Washington's waters were allowed to be contaminated up to the level permitted by its extant standards – a level that supported fish consumption at a mere 6.5 grams/day – just one fish meal per month. This estimate of fish intake was drawn from a survey of the general population in the United States conducted back in 1973-74.

Meanwhile, more recent local studies of fish intake by tribal and other populations in the Pacific Northwest became available in the 1990s. For example, the Columbia River Inter-Tribal Fish Commission (CRITFC) published a survey quantifying its four member tribes' contemporary fish consumption in 1994; and the Squaxin Island and Tulalip Tribes published a survey of their respective tribes' contemporary fish intake in 1996.<sup>16</sup> These surveys documented contemporary fish intake at markedly higher rates than reflected in Washington's FCR, ranging as high as 972 grams/day.<sup>17</sup> Shortly thereafter, Washington acknowledged the need to incorporate this new scientific data into state standards for water and cleanups. In fact, it published a draft analysis of these studies as early as 1999.<sup>18</sup> Yet, it sat on its NTR-based standards for another decade,

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<sup>12</sup> 33 U.S.C. § 1313(c)(2)-(4)(A).

<sup>13</sup> 33 U.S.C. § 1313(c)(4)(B).

<sup>14</sup> Congress' distaste for delay on the part of the states was made known during debate surrounding the 1987 amendments. *See, e.g.*, U.S. Environmental Protection Agency, Establishment of Numeric Criteria for Priority Toxic Pollutants; States' Compliance; Final Rule, 57 Fed. Reg. 60848, 60849 (Dec. 22, 1992) [hereinafter EPA, NTR] ("The critical importance of controlling toxic pollutants has been recognized by Congress and is reflected, in part, by the addition of section 303(c)(2)(B) to the Act. Congressional impatience with the pace of State toxics control programs is well documented in the legislative history of the 1987 amendments.").

<sup>15</sup> *Id.*

<sup>16</sup> COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION, A FISH CONSUMPTION SURVEY OF THE UMATILLA, NEZ PERCE, YAKAMA AND WARM SPRINGS TRIBES OF THE COLUMBIA RIVER BASIN (1994); KELLY A. TOY, ET AL., A FISH CONSUMPTION SURVEY OF THE TULALIP AND SQUAXIN ISLAND TRIBES OF THE PUGET SOUND REGION (1996).

<sup>17</sup> *Id.* 972 grams/day is the maximum value documented in the CRITFC survey.

<sup>18</sup> In 1999 Ecology published a draft document, which it never finalized, that analyzed the CRITFC and Tulalip/Squaxin Island data as part of its review of the then-current science for use in its risk-based water quality

preferring to wait and “observe” while neighboring states and tribes updated their respective WQS to reflect the most recent science.<sup>19</sup>

The scientific evidence continued to mount showing higher fish intake by people affected by Washington’s standards. For example, a survey of ten Asian-American and Pacific Islander groups in King County was published in 1999; and a survey of the Suquamish Tribe was published in 2000.<sup>20</sup> It wasn’t until 2010 that Washington finally initiated the formal process to update its WQS. And then its rulemaking effort dragged on for years.

Throughout this time, EPA worked alongside Washington’s Department of Ecology (Ecology), seeking to facilitate a state process that would result in approvable WQS.<sup>21</sup> Even as the state struggled through several missed deadlines, reversals of course, and other irregularities – and the months and then years ticked by – EPA did its utmost to defer to the state and allow the state’s process to unfold. Ultimately, more than two decades passed between the time the CRITFC data became available and the time Washington finally updated its water quality standards to reflect this scientific information. Washington’s egregious delay is summarized in NWIFC’s Comments on Ecology’s 2016 Draft Rule.<sup>22</sup>

Washington’s recalcitrance is of great concern to NWIFC and its 20 member tribes. NWIFC’s member tribes have constitutionally protected, treaty-reserved rights to harvest, consume, and manage fish and shellfish in their usual and accustomed areas. These areas are directly or indirectly affected by the WQS established for waters over which the state claims jurisdiction.<sup>23</sup> NWIFC thus emphasizes the urgent need to ensure that WQS for Washington protect these reserved rights and resources, and protect the health, livelihoods, and well-being of tribal members. While Ecology’s process was allowed to drag on, Washington’s outdated standards forced anyone who would eat

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and cleanup standards. LESLIE KEILL & LON KISSINGER, WASHINGTON STATE DEPARTMENT OF ECOLOGY, ANALYSIS AND SELECTION OF FISH CONSUMPTION RATES FOR WASHINGTON STATE RISK ASSESSMENTS AND RISK-BASED STANDARDS (Draft, 1999).

<sup>19</sup> Catherine A. O’Neill, *Fishable Waters*, 1 AM. INDIAN L. J. 181, at 220-27 & n.209 (2013) [hereinafter O’Neill, *Fishable Waters*] (chronicling Washington’s lengthy delay in updating its WQS and documenting Ecology staff statements to this effect).

<sup>20</sup> Ruth Sechana, et al., ASIAN AND PACIFIC ISLANDER SEAFOOD CONSUMPTION SURVEY (1999); THE SUQUAMISH TRIBE, FISH CONSUMPTION SURVEY OF THE SUQUAMISH INDIAN TRIBE OF THE PORT MADISON INDIAN RESERVATION, PUGET SOUND REGION (2000) [hereinafter Suquamish Survey].

<sup>21</sup> In fact, the state came under criticism for the numerous delays and reversals of course that marked its process; nonetheless, EPA worked assiduously to facilitate the state’s efforts to produce approvable WQS. See, e.g., O’Neill, *Fishable Waters*, at 232-40.

<sup>22</sup> Northwest Indian Fisheries Commission, Comments on the Washington Department of Ecology’s 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington Water Quality Standards, Appendix A, “Detailed Chronology of Tribal Efforts to Establish Revised Human Health Criteria and State’s Responses” (April 20, 2016) [hereinafter NWIFC, Comments on Ecology’s Draft Rule].

<sup>23</sup> 90.48.030 Wash. Rev. Code (“The department [of Ecology] shall have the jurisdiction to control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington”).

fish more than once a month to do so at his or her peril. The affront to the NWIFC tribes – who are fishing peoples – is profound.

EPA, of course, has its own legal obligations under the CWA. It could no longer wait in the wings while the state permitted these unsupportable standards to operate as a *de facto* ceiling on the safe consumption of fish from Washington waters. Finally, in September of 2015, EPA stated that “[b]ecause Washington’s existing human health criteria, as promulgated by EPA in the NTR, are no longer protective of the applicable designated uses per the CWA ... EPA determines under CWA section 303(c)(4)(B) that new or revised WQS for the protection of human health are necessary to meet the requirements of the CWA for Washington.”<sup>24</sup> EPA noted that Washington had yet to update the 1992 NTR-based standards and emphasized that “the best available data now demonstrate that fish consumers in Washington, including tribes with treaty-protected rights, consume much more fish than 6.5 g/day. There are also new data and scientific information available to update the toxicity and exposure parameters used to calculate human health criteria.”<sup>25</sup> EPA’s determination triggered a non-discretionary duty under the CWA to propose water quality standards for Washington within ninety days.<sup>26</sup> Nonetheless, EPA held back, in hopes that the state would issue its own standards. Still, the state was unable to do so.

On February 26, 2016, Washington Waterkeepers sued the EPA in federal district court, and shortly thereafter sought an injunction requiring EPA to comply with the CWA by promulgating revised water quality standards within thirty days of a court order.<sup>27</sup> Even here, EPA sought to accommodate the state, requesting that the court permit additional time for the state to produce an approvable rule.<sup>28</sup> Specifically, it asked that any court-ordered deadline be postponed until September 15, 2016, but, if Ecology submitted its own water quality standards before that date, that the deadline be postponed further, until November 15, 2016, in order “to prevent unnecessary promulgation of federal criteria.”<sup>29</sup> The court was persuaded by EPA’s entreaty on the state’s behalf.

As even this summary account of the rulemaking timeline makes clear, *EPA’s relationship with the state has been one of support and deference* – quite the opposite of the picture the Petition attempts to paint of an EPA that “has sought to advanced [sic] its agenda with no basis in and in disregard of the Clean Water Act.” Rather, it was because of its obligations under the CWA that EPA

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<sup>24</sup> 80 Fed. Reg. at 55066.

<sup>25</sup> *Id.* at 55063.

<sup>26</sup> 33 U.S.C. § 1313(c)(4). The deadline was December 14, 2015.

<sup>27</sup> *Puget Soundkeeper Alliance, et al. v. U.S. Environmental Protection Agency*, Case No. 2:16-cv-00293-BJR, Memorandum Opinion, 2 (W.D. Wash., Aug. 3, 2016).

<sup>28</sup> *Id.* at 4.

<sup>29</sup> *Id.* at 6.

could no longer legally decline to act. Indeed, as the federal district court put it, “when agency dereliction occurs, as it did here,” courts must compel their compliance with the CWA.<sup>30</sup>

## **II. Washington Submitted Standards that Were Not Based on “Sound Scientific Rationale” and Were Not Fully Approvable by EPA**

Ultimately, Washington submitted standards to EPA that, while approvable in some respects, fell short of this mark in others. EPA is tasked with ensuring that a state’s water quality criteria are “based on sound scientific rationale” and “contain sufficient parameters or constituents to protect the designated use.”<sup>31</sup> However, Ecology’s criteria in numerous instances simply ignored the best available science. More importantly, this was the case for several priority contaminants and key variables. Contrary to the Petition’s contention, EPA could not permissibly have approved the standards submitted by Washington.

Ecology submitted a rule that, as a general matter, took a step forward with respect to some of the key variables used to calculate its standards. Faced with overwhelming scientific evidence that people affected by Washington’s standards consume fish at rates considerably greater than the agency had previously assumed, the state was persuaded that it could not defensibly use an FCR of less than 175 grams/day. While this FCR captures only contemporary fish intake that has been shown to be biased downward due to suppression, it is an improvement in terms of incorporating updated science.<sup>32</sup> Ecology’s rule also continued to embrace the state’s longstanding judgment that people should not be subjected to an increased cancer risk greater than 1 in 1,000,000. For several of the contaminants that matter most for human health, however, Ecology’s rule included exceptions or alternative assumptions that resulted in less protective standards.

For example, Ecology’s final rule effectively did nothing to update its standards for either methylmercury or PCBs – leaving in place a status quo that was a quarter of a century old (these two examples are elaborated below). Worse, Ecology’s rule resulted in *more lenient* standards for dioxins, arsenic, and 5 of the 7 carcinogenic polycyclic aromatic hydrocarbons (PAHs) than those previously in force in the state. EPA appropriately found that it could only partially approve

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<sup>30</sup> *Id.* at 7.

<sup>31</sup> 40 C.F.R. § 131.11(a)(1).

<sup>32</sup> As documented at length in comments by NWIFC to Ecology, while an FCR of 175 grams/day is an “improvement” over the woefully outdated and unsupportable FCR on which Washington’s WQS had previously been based, from NWIFC’s perspective this FCR reflects a “a minimum value that must be used in conjunction with other revised values” for the inputs to the equations used to derive human health criteria, including the acceptable risk level, bioaccumulation factors, and relative source contribution. Moreover, this FCR “is lower than documented contemporary or heritage rates in regional tribal communities, and does not account for the suppression of fish consumption resulting from the availability of fish and shellfish, habitat degradation, biological and chemical contamination, or access to fishing grounds.” NWIFC, Comments on Ecology’s Draft Rule, at 13-30, & App. C.

Washington's rule, where Ecology had circumvented, rather than grounded its standards in, an updated and "sound scientific rationale" and had thus submitted HHC that would fail to be protective of Washington's designated uses. The reasoning supporting EPA's finding was thoroughly explained in its final rule and its technical basis elaborated in EPA's 46-page Technical Support Document.<sup>33</sup>

### A. Methylmercury

Washington's approach to methylmercury is out of step with the current science. The adverse human health effects of methylmercury have long been documented, for example, in the EPA's *Mercury Study Report to Congress* in 1997, and in the National Research Council's *Toxicological Effects of Methylmercury* in 2000.<sup>34</sup> Despite broad scientific consensus regarding methylmercury's harms and despite EPA guidance on a methylmercury criterion dating from 2001, Washington, remarkably, *simply refused to update* its standard for methylmercury. Instead, it put off any revision of its mercury standard until some unspecified time in the future, stating that it had "decided to defer" the adoption of a methylmercury HHC until after the current rulemaking.<sup>35</sup> That is, Ecology took it upon itself to relegate to the back burner one of the state's *most pressing* contaminants.

Methylmercury is a potent neurodevelopmental toxin; exposure *in utero* or during childhood may result in irreversible neurological damage.<sup>36</sup> Methylmercury is an extremely bioavailable form of mercury, readily uptaken by fish, where it bioaccumulates in fish tissue.<sup>37</sup> In 2001, EPA issued its methylmercury water quality criterion, expressed as a fish and shellfish tissue value.<sup>38</sup> As it noted, "[t]his approach is a direct consequence of the scientific consensus that consumption of contaminated fish and shellfish is the primary human route of exposure to methylmercury."<sup>39</sup> In discussing methylmercury's human health risks, EPA stated bluntly that "methylmercury is highly toxic to mammalian species and causes a number of adverse effects."<sup>40</sup> EPA's methylmercury criterion was based on a reference dose (RfD) of 0.1 µg/kg/day that had been "established as the Agency consensus estimate in 1995," and its scientific basis "updated using the most current data

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<sup>33</sup> U.S. Environmental Protection Agency, Technical Support Document, The EPA's Partial Approval/Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools Submitted on August 1, 2016 (Nov. 15, 2016) [hereinafter EPA, TSD for Washington's HHC].

<sup>34</sup> U.S. ENVIRONMENTAL PROTECTION AGENCY, 1 MERCURY STUDY REPORT TO CONGRESS (1997); NATIONAL RESEARCH COUNCIL, TOXICOLOGICAL EFFECTS OF METHYL MERCURY (2000) [hereinafter NRC, METHYL MERCURY].

<sup>35</sup> Washington State Department of Ecology, Washington State Water Quality Standards: Human Health Criteria and Implementation Tools, Overview of Key Decisions in Rule Amendment 80 (Aug. 2016) [hereinafter Ecology, Key Decisions].

<sup>36</sup> NRC, METHYL MERCURY, at 17.

<sup>37</sup> *Id.* at 16.

<sup>38</sup> U.S. Environmental Protection Agency, Water Quality Criteria: Notice of Availability of Water Quality Criteria for the Protection of Human Health: Methyl Mercury, 66 Fed. Reg. 1344 (Jan. 8, 2001).

<sup>39</sup> *Id.*

<sup>40</sup> *Id.* at 1352.

and analyses.”<sup>41</sup> As it issued the methylmercury water quality criterion in 2001, EPA reminded states of their obligations under the CWA, stating “once EPA publishes new or revised section 304(a) water quality criteria guidance,” it “expects the criterion recommendation to be used ... by states ... in establishing or updating water quality standards.”<sup>42</sup> As of 2010, seven states, two territories, and the District of Columbia had already adopted the new methylmercury fish tissue criterion.<sup>43</sup> In 2010, EPA provided further assistance, publishing extensive implementation guidance for those states that had yet to incorporate the updated methylmercury criterion.<sup>44</sup> In issuing this additional guidance, EPA emphasized that it “expect[ed]” all remaining states to incorporate the 2001 methylmercury criterion during their next triennial review.<sup>45</sup> And states, such as Oregon, routinely did so, integrating the 2001 criterion with a fish consumption rate founded on local data, as recommended by the EPA guidance.<sup>46</sup>

During this period, Washington increasingly recognized the threat posed by methylmercury contamination throughout the state. Its Department of Health issued a statewide fish consumption advisory for methylmercury, warning people to reduce or eliminate consumption of fish from its waters.<sup>47</sup> Its Department of Ecology identified methylmercury as a priority contaminant in Puget Sound.<sup>48</sup>

Thus, by the time it finally sought to update its water quality standards, Ecology had had ample notice that its methylmercury standard would need to be updated to reflect the current science, and had been provided with technical guidance by EPA on how to do so. Yet, inexplicably, Ecology simply refused. Instead, it dubbed methylmercury a “challenging chemical,” and claimed that,

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<sup>41</sup> *Id.*

<sup>42</sup> *Id.* at 1344; 1350. In fact, EPA has made clear to states since the 1980s the expectation that states would incorporate any EPA updates to criteria at their earliest opportunity, i.e., as part of the next triennial review. EPA informed states in guidance memoranda that “EPA expects each State to comply with [these] statutory requirements in any section 303(c) water quality standards review initiated after enactment of the Water Quality Act of 1987.” See, e.g., U.S. Environmental Protection Agency, Guidance for State Implementation of Water Quality Standards for CWA Section 303(c)(2)(B) at 15 (Dec. 1988), <https://www.epa.gov/sites/production/files/2014-10/documents/cwa303c-hanmer-memo.pdf>.

<sup>43</sup> U.S. Environmental Protection Agency, Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion (2010).

<sup>44</sup> *Id.*

<sup>45</sup> *Id.* at 17. (“EPA expects that with the publication of this guidance, states and authorized tribes will include new or revised criteria for methylmercury in their waters as part of the next three year review of standards required by section 303(c) of the Clean Water Act”).

<sup>46</sup> U.S. Environmental Protection Agency, Technical Support Document for EPA’s Action on Oregon’s New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011 (Oct. 17, 2011).

<sup>47</sup> Washington Department of Health, “Fish Consumption Advisories” <http://www.doh.wa.gov/CommunityandEnvironment/Food/Fish/Advisories.aspx>.

<sup>48</sup> Washington Department of Ecology, *Control of Toxic Chemicals in Puget Sound* 20 (2011), <https://fortress.wa.gov/ecy/publications/documents/1103024.pdf> (identifying methylmercury among 17 priority “contaminants of concern” given that they “harm or threaten to harm the Puget Sound ecosystem”).



therefore, it needed more time. It offered no scientific rationale for failing to update the HHC for this priority contaminant. Rather, Ecology claimed vaguely that it wished to develop an “integrated approach” to address methylmercury; noted that this would take time to do; and argued that “[t]aking time to develop an integrated approach now would slow the progress of the adoption of the other proposed HHC and implementation tools. Ecology thinks continued progress on the main rule adoption is important to maintain.”<sup>49</sup>

Notably, although Ecology’s rulemaking work continued in earnest in the months and years immediately preceding the issuance of its water quality standards in 2016, Ecology declined to make use of this time to incorporate the federal methylmercury criterion into its rule. Ecology’s 2015 rule did not include a methylmercury criterion, but this rule was subsequently withdrawn at the Governor’s direction, and Ecology went back to the drawing board to alter key parameters. However, despite the additional time afforded by this withdrawal, Ecology’s final rule, submitted in 2016, did nothing to remedy the lack of a methylmercury standard. In fact, to the contrary, the record shows that, as early as 2013, Ecology had identified “postpone development” of a criterion as a “possible path” for handling the need to update its methylmercury standard.<sup>50</sup>

In short, despite a longstanding scientific consensus on methylmercury’s harms, and despite the existence of a CWA 304(a) methylmercury criterion since 2001, Ecology – 15 years later – still declined to update its methylmercury standard by seeking more time. Ecology’s inaction on methylmercury flies in the face of the “sound scientific rationale” on which state standards must be based under the CWA, as EPA appropriately found. It is in precisely such circumstances of state recalcitrance that Congress directed EPA to step in and ensure that the CWA’s goals are not thwarted. EPA’s rule, accordingly, includes an updated criterion for methylmercury in fish tissue, thus addressing this contaminant of utmost concern for people who consume fish from Washington waters.

## **B. PCBs**

Washington’s approach to PCBs is similarly not scientifically defensible. Ecology arrived at its criterion for PCBs in a circuitous manner that was clearly not driven by the science. Ecology didn’t accept the criterion that would have resulted by a straightforward calculation using its standard assumptions for its carcinogenic HHC – namely the updated FCR of 175 grams/day and its longstanding espousal of an acceptable cancer risk level of 1 in 1,000,000, that is,  $1 \times 10^{-6}$ . Instead, Ecology selected what it termed a “chemical-specific risk level” to be used “exclusively for PCBs”<sup>51</sup> –

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<sup>49</sup> Ecology, Key Decisions, at 83.

<sup>50</sup> Washington Department of Ecology, Surface Water Quality Standards: Human Health Criteria Policy – Information to Support Morning Discussion on Rule Alternatives (Nov. 6, 2013) <http://www.ecy.wa.gov/programs/wq/swqs/Nov6AfternoonPresentation.pdf#page=43>.

<sup>51</sup> Ecology, Key Decisions, at 66.

one that was nearly an order of magnitude less protective, at  $4 \times 10^{-5}$ . Ecology plugged this number into its risk assessment equation, but the result was that the PCB criterion would be less stringent than Washington's current criterion for PCBs – which, as you may recall, supports fish intake at the mere 6.5 grams/day rate. So, Ecology decided to default to its current PCB criterion under the NTR. It then back-calculated to determine what risk level was necessary to make the math work out, given its updated FCR. Thus, Ecology arrived at a risk level that is unique to PCBs,  $2.3 \times 10^{-5}$ .<sup>52</sup>

Ecology's machinations to avoid the mathematical result of the updated science on fish intake raised a flag EPA would have been remiss to neglect. Ecology's cancer risk level for PCBs is a constructed number, back-calculated to ensure no change from the status quo. Ecology offered no evidence that those exposed to this contaminant in fact view cancer attributable to PCBs to be different from – and somehow more acceptable than – cancer attributable to any other contaminant.<sup>53</sup> Ecology provided no account of how the citizens of Washington arrived at a nearly tenfold increase in risk from PCBs than they accepted from other carcinogens.<sup>54</sup> This lack of substantiation is the more problematic given that it is a clear departure from the  $1 \times 10^{-6}$  risk level that had been in effect *for all toxic contaminants* in Washington for more than two decades, and a clear departure from the  $1 \times 10^{-6}$  risk level that Ecology was persuaded to retain in general for the HHC it submitted – due to the public outcry over the  $1 \times 10^{-5}$  risk level contained in the rule that Ecology initially proposed but ultimately withdrew.

Moreover, Ecology's PCB-specific risk level is also a departure from the standard risk level assumed by EPA in issuing criteria for use by states nationwide. EPA has indicated that in reviewing states' water quality standards, it will consider the actual risk that results to those affected when all of a state's selected parameters are considered, and has stated that its scrutiny will increase as a state's target risk level becomes less protective or less conservative, e.g., if it moves from  $1 \times 10^{-6}$  to  $1 \times 10^{-5}$ .<sup>55</sup> EPA has emphasized that it will "carefully evaluate" a state's assumptions if the state chooses "to alter any one of the standard EPA assumption values."<sup>56</sup>

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<sup>52</sup> *Id.* at 67.

<sup>53</sup> *Id.* at 62-67 (discussing derivation of HHC for PCBs but offering no evidence or references in the literature for PCB-specific judgments on the acceptability of cancer risk).

<sup>54</sup> *Id.*

<sup>55</sup> EPA, NTR, 57 Fed. Reg. at 60855 ("In submitting criteria for the protection of human health, States were not limited to a 1 in 1 million risk level ( $10^{-6}$ )... If a State selects a criterion that represents an upper bound risk level less protective than 1 in 100,000 (i.e.,  $10^{-5}$ ), however, the State needed to have substantial support in the record for this level.... [Among other things,] the record must include an analysis showing that the risk level selected, when combined with other risk assessment variables, is a balanced and reasonable estimate of actual risk posed, based on the best and most representative information available. The importance of the estimated actual risk increases as the degree of conservatism in the selected risk level diminishes. EPA carefully evaluated all assumptions used by a State if the State chose to alter any one of the standard EPA assumption values.").

<sup>56</sup> *Id.*

Again, EPA appropriately found Ecology's criterion not to be protective of Washington's designated uses and Washington's proffered justification to be unavailing, as it was untethered to a sound scientific rationale. EPA's rule, accordingly, includes a criterion for PCBs that is derived by a straightforward application of the updated FCR of 175 grams/day and Washington's longstanding cancer risk level of  $1 \times 10^{-6}$ .

These two examples of Ecology's maneuverings to avoid what sound science requires for methylmercury and PCB criteria are meant to be illustrative. This account does not exhaust the scientific infirmities of the WQS submitted by Ecology to EPA. It should, however, afford a sense of the deficiencies in Ecology's rule and of the appropriateness of EPA's partial disapproval as well as the appropriateness of EPA's issuance of several WQS for Washington – contrary to the Petition's portrayal. EPA analysis was undertaken and documented as part of a robust public process, as elaborated below in Part III.

### **III. The Petition Merely Rehashes Arguments that Have Already Been Thoroughly Vetted in Public Processes**

The Petition merely rehashes arguments that have already been thoroughly vetted in lengthy public processes at the state and federal levels, throughout which industry was an active participant. These arguments have already been carefully considered by EPA through robust notice-and-comment rulemaking. EPA provided its reasons for accepting or rejecting these arguments, as appropriate, and documented its analysis in a voluminous record. There is no new science or law that would require a different result were EPA again to undertake this analysis. Any new rulemaking would likely produce the same outcome. As such, the reconsideration that the Petition requests would amount to an unproductive bureaucratic exercise, and thus an unnecessary waste of taxpayer money.

The Petition asks EPA to reconsider and approve the state's water quality criteria, and to repeal or withdraw the EPA water quality criteria for Washington, citing 5 U.S.C. § 553(e). But this provision of the Administrative Procedure Act (APA) does not confer on agencies unfettered authority to reevaluate and discard past rulemakings. Rather, under the APA, an agency may reconsider its earlier rules only to the extent permitted by law, and any revisions will be scrutinized to ensure they are supported by "a reasoned explanation."<sup>57</sup> Moreover, an agency may not disregard the science in order to effectuate a change in policy. As always, an agency must articulate a rational connection between the facts it finds and the conclusions it reaches.<sup>58</sup> And, as Justice Kennedy recently emphasized in concurrence in *FCC v. Fox Television Stations, Inc.*, "[a]n agency cannot simply

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<sup>57</sup> *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 516 (2009) (stating that "a reasoned explanation is needed for disregarding facts and circumstances that underlay or were engendered by the prior policy").

<sup>58</sup> *Motor Vehicle Mfrs. Ass'n v State Farm Mut. Auto Ins. Co.*, 463 U.S. 29, 43 (1983).

disregard contrary or inconvenient factual determinations that it made in the past.”<sup>59</sup> Yet the Petition offers no new scientific or legal support that would allow EPA permissibly to reach a different conclusion. It points to no new data, studies, evidence, or circumstances on which EPA could rationally base a reversal of course.

Instead, the Petition repeats the same arguments that industry had already urged during the years-long state and federal processes, throughout which industry was an active participant. Indeed, its arguments are often lifted verbatim from earlier comment letters they had submitted for consideration by the state and federal agencies over the years. In some instances, the Petition didn’t even bother to update its citations – for example, it references the national default FCR as being 17.5 grams/day;<sup>60</sup> however, this national default value was updated in 2015 to 22 grams/day. The Petition achieves its length by cutting and pasting from documents that had been made available to, and were thoroughly considered by, Ecology, EPA, and the public during the extensive state and federal processes chronicled above in Part I.

Under the Clean Water Act, EPA is authorized to approve a state’s submitted WQS only if “such standards meet the requirements of this chapter.”<sup>61</sup> CWA § 303 provides:

Such revised or new water quality standard shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses. Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.<sup>62</sup>

EPA supported with a detailed, rigorous analysis its finding that many of the state’s water quality criteria were not “based on sound scientific rationale” and did not “contain sufficient parameters or constituents to protect the designated use.”<sup>63</sup> EPA similarly supported with a detailed, rigorous analysis the water quality criteria that it was required, under the CWA, to issue in the state’s stead.<sup>64</sup> The Petition raises no new information on which EPA might permissibly base an outcome that departs from these well-reasoned analyses. Reconsideration now would not reasonably sustain a different rule. The Petition’s request for reconsideration is thus a request for what can only be a pointless and wasteful bureaucratic exercise. As noted above, the State of Washington

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<sup>59</sup> *FCC*, 556 U.S. at 537 (Kennedy, J., concurring in part and concurring in the judgment).

<sup>60</sup> Petition, at 46.

<sup>61</sup> 33 U.S.C. § 1313(c)(3) and (4).

<sup>62</sup> 33 U.S.C. § 1313(c)(2)(A).

<sup>63</sup> See generally EPA, TSD for Washington’s HHC.

<sup>64</sup> *Id.*

itself has indicated its desire to move on, and focus instead on working together with its regulated sources on implementation.

EPA's rule, moreover, is the result of years of public process at the state and federal levels, culminating in a robust notice-and-comment rulemaking process. Industry was an active participant throughout these processes. Industry's arguments, reiterated again in the Petition, have already been carefully and thoroughly considered by EPA. EPA provided notice of, and ample opportunity to comment on, its proposed rule; EPA provided its reasons for accepting or rejecting these and other arguments, as appropriate, and documented its analysis in a voluminous administrative record,<sup>65</sup> including a 419-page Response to Public Comments.<sup>66</sup> EPA then published a final rule that was supported by scientific and legal analysis that was consistent with its proposed rule, while reflecting changes where warranted in response to the input it had solicited and received during the public comment period.

The Petition, however, claims that the public was not afforded adequate notice of, and opportunity to comment on, the analysis that supported EPA's final rule, citing APA § 553(b) and (c). In particular, the Petition attempts to portray as "novel" those aspects of EPA's rationale that pertain to tribal treaty rights, asserting that this was "invent[ed]" in the final rule and "not put forth in the proposed rule."<sup>67</sup> For example, the Petition tries to make much of the fact that the proposed rule used the term "tribal reserved fishing right" and mentioned the word "subsistence" twice, whereas the final rule used the term "treaty-reserved subsistence right" and mentioned the word "subsistence" sixty times, claiming, therefore, that the EPA had "abandoned the treaty rights 'analysis' contained in the proposed rule" and "replaced" this in the final rule with a treaty rights analysis that it had just "discovered."<sup>68</sup>

However, an unprejudiced inspection of the rulemaking record shows the Petition's claim to be unavailing. EPA set forth in its proposed rule its supporting scientific and legal analysis, including

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<sup>65</sup> This record can be accessed via regulations.gov at Docket ID: EPA-HQ-OW-2015-0174.

<sup>66</sup> U.S. Environmental Protection Agency, Response to Comments: Revision of Certain Federal Water Quality Criteria Applicable to Washington, 40 CFR Part 131 (Nov. 10, 2016) [hereinafter EPA, Response to Comments].

<sup>67</sup> Petition, at 30.

<sup>68</sup> Petition, at 20; 24-26. The Petition then tries to parlay this characterization into a basis for additional OMB review, on the theory that EPA's final rule "raises a novel legal or policy issue" and is therefore a "significant regulatory action" within the meaning of EO 12866 § 3(f). Petition, at 66-67. As elaborated below in Part V, however, EPA's treaty rights analysis rests on longstanding legal obligations contained in the U.S. Constitution, treaties, and caselaw. The Petition also inaccurately portrays the overall determination that the proposed and final rules do not constitute significant regulatory action as having been made solely by EPA. Petition, at 63-67. EPA, however, consulted with OMB prior to publishing both rules. These consultations afforded OMB the occasion to have any questions addressed and ultimately to satisfy itself that it was unnecessary to conduct additional OMB review; OMB thus determined that it would "waive" further review, and communicated this decision to EPA. EPA documented this exchange in its Response to Comments, noting that "The Office of Management and Budget (OMB) concurred with EPA that this rule is not a significant regulatory action under the terms of 12866 and is, therefore, not subject to review under Executive Orders 12866 and 13563 (Improving Regulation and Regulatory Review)." EPA, Response to Comments, at 400-01.

the need to “effectuate and harmonize” standards set or approved under the CWA for Washington with the relevant tribal treaties.<sup>69</sup> EPA specifically pointed out that, “when setting criteria to support the most sensitive use in Washington, it is necessary to consider other applicable laws, including federal treaties” and that, “[i]n Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes, including treaty-reserved rights to fish at all usual and accustomed fishing grounds and stations in waters under state jurisdiction, which cover the majority of waters in the state.”<sup>70</sup>

The APA requires an agency conducting notice-and-comment rulemaking to publish in its notice of proposed rulemaking “either the terms or substance of the proposed rule or a description of the subjects and issues involved.”<sup>71</sup> Courts have generally interpreted this to mean that the final rule the agency adopts must be a “logical outgrowth” of the rule proposed.<sup>72</sup> Courts have explained that “the relevant inquiry is whether or not potential commentators would have known that an issue in which they were interested was ‘on the table’ and was to be addressed by a final rule,” noting, that “[w]hile an agency must explain and justify its departures from a proposed rule, it is not straitjacketed into the approach initially suggested on pain of triggering a further round of notice-and-comment.”<sup>73</sup>

Industry and the public were afforded ample notice of and the opportunity to comment on EPA’s scientific and legal analysis, and did so, during the public comment period – a period that EPA extended, at industry’s request.<sup>74</sup> It is difficult to comprehend how the Petition can suggest that industry or the public were not aware that the matter of tribes’ treaty-secured subsistence fishing rights was “on the table” when the proposed rule explicitly stated that it was “necessary” to consider tribal treaties, that “[i]n Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes,” and that these “treaty-reserved rights to fish” “cover the majority of waters in the state.”<sup>75</sup> While EPA’s final rule thus incorporated semantic changes, included clarifications, and provided further explanation and support, as appropriate, its final rule was premised on substantially the same scientific and legal analysis as its proposed rule. The nature and extent of the changes from the proposed rule to the final rule were precisely those that would be expected as part of a notice-and-comment rulemaking process in

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<sup>69</sup> 80 Fed. Reg. at 55067.

<sup>70</sup> 80 Fed. Reg. at 55066 (citation omitted).

<sup>71</sup> 5 U.S.C. § 553(b)(3).

<sup>72</sup> See, e.g., *United Steelworkers of America, AFL-CIO-CLC v. Marshall*, 647 F.2d 1189, 1221 (D.C. Cir. 1980), cert. denied *sub nom. Lead Industries Assn., Inc. v. Donovan*, 453 U.S. 913 (1981).

<sup>73</sup> *Am. Med. Ass’n. v. United States*, 887 F.2d 760, 768-69 (7th Cir. 1989).

<sup>74</sup> Revision of Certain Federal Water Quality Criteria Applicable to Washington, 81 Fed. Reg. 85417, 85418 & n.3 (providing a 45-day extension at the request of the Association of Washington Business—Washington State’s Chamber of Commerce, Washington Public Ports Association (on behalf of the Association of Washington Cities and the Washington State Association of Counties), Western Wood Preservers Institute, ALCOA, American Forest and Paper Association, McFarland Cascade, Schnitzer Steel Industries, and Weyerhaeuser).

<sup>75</sup> 80 Fed. Reg. at 55066.

which EPA was open to industry and other public input. EPA's final rule was a "logical outgrowth" of the rule it proposed and its rulemaking was clearly adequate in view of the courts' understanding of the APA's notice-and-comment requirements.

Finally, to the extent that the Petition makes arguments related to implementation, it raises issues that are outside of those EPA is statutorily authorized to consider in setting HHC. Under the CWA, HHC are health-based standards, such that considerations of technical feasibility and cost are not properly part of the standard-setting exercise undertaken by states or the EPA.<sup>76</sup> Rather, Congress directed that these standards be set "to protect the public health or welfare," among other things by ensuring that the waters are "fishable" – i.e. that they support fish that may be safely harvested and consumed by humans. Thus, the Petition's allegations regarding the feasibility and cost of compliance, even if true, are not germane to the state's or EPA's HHC standard-setting inquiry. Because these issues fall outside those EPA may permissibly consider, it would be "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law"<sup>77</sup> to import these factors into the CWA where Congress saw fit to exclude them. EPA appropriately recognized as much. In its Response to Comments, EPA stated that "[w]ater quality criteria are scientifically derived, measurable properties of water that, when achieved, protect applicable designated uses. Thus water quality criteria are not derived on the basis of costs and benefits, nor does the CWA allow for their derivation in such a manner."<sup>78</sup> Rather, as discussed below in Part IV, these concerns are properly considered – and were in fact addressed – by means of implementation tools.

#### **IV. EPA Largely Affirmed Washington's Use of Implementation Tools to Allow Industry a Reasonable Time to Comply with CWA Requirements**

Ecology devoted considerable effort during the rulemaking process to expand its existing implementation tools and to develop new implementation tools – all with an eye toward accommodating industry's concerns with respect to feasibility and costs.<sup>79</sup> EPA assisted Ecology in this effort, working to fashion devices that responded to industry input and ideas. Some of these tools (e.g., intake credits) were newly created in this rulemaking – designed specifically to resolve issues that industry had presented to the agencies. EPA largely affirmed the enlarged menu of implementation tools, now available in Washington, in order to allow industry a reasonable time to

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<sup>76</sup> See, e.g., Catherine A. O'Neill, *Exposed: Asking the Wrong Question in Risk Regulation*, 48 ARIZ. ST. L. J. 703, 712 (2016) (discussing health-based standards, which "seek to eliminate contaminants in excess of levels that are safe for humans or levels that pose an amount of risk deemed acceptable").

<sup>77</sup> 5 U.S.C. § 706(2)(A).

<sup>78</sup> EPA, Response to Comments, at 401.

<sup>79</sup> See, e.g., Northwest Pulp & Paper Association, Letter to Becka Conklin, Washington State Department of Ecology (Dec. 17, 2010) (responding to Ecology's initiation of triennial review process under the CWA, and urging Washington to expand its "implementation tools" as a pre-condition to updating its FCR and its WQS).

comply with the new WQS.<sup>80</sup> Regulated sources will now be able to avail themselves of variances, compliance schedules, and/or intake credits in order to help them achieve compliance.<sup>81</sup>

EPA deferred for the most part to the state's formulation of these tools, affirming that "[t]he state may use its approved implementation tools in concert with the approved new state criteria as well as the federal human health criteria applicable to Washington."<sup>82</sup> In so doing, EPA emphasized that it "recognizes the importance of implementation tools in making progress toward improved water quality while allowing a reasonable time for industry to comply" with new requirements, and "remains committed to providing assistance to Ecology during implementation of the criteria."<sup>83</sup>

In fact, it is in the realm of implementation where there *have* been new developments since Washington embarked on its rulemaking—contrary to the Petition's assumption of technological stasis.<sup>84</sup> Notably, there have already been innovations in the technologies available to address PCB contamination, even since the time of the 2013 HDR Engineering survey relied upon by industry in its comments to the administrative record, and cited again in the Petition for its claim that minimizing PCBs is "not technologically feasible." For example, in 2016 Virginia's Department of Environmental Quality (VDEQ) published a 71-page *Pollution Minimization Plan Technical Resource Guide* for PCBs, detailing the numerous technologies and systems (e.g., "treatment trains") for minimizing PCBs in various environmental media.<sup>85</sup> In the section devoted to "Remediation Methods for Industrial, Wastewater, and Stormwater Effluent," VDEQ identified several categories of available treatment methods for PCBs. *In fully 2/3 of these categories, VDEQ documented innovations in the treatment methods that had emerged since industry's 2013 compilation of then-available technologies.*<sup>86</sup>

Moreover, as Virginia underscored, the conditions for continued innovation and entrepreneurship are ripe, given the certain market provided by the need to address the widespread threat that PCBs pose to human health. "Due to the widespread problem of PCB contamination, efficient and cost-

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<sup>80</sup> EPA, TSD for Washington's HHC, at 35-46.

<sup>81</sup> *Id.*

<sup>82</sup> Letter from Daniel D. Opalski, EPA Region X, to Maia Bellon, Washington State Department of Ecology, Transmitting the EPA TSD for Washington's HHC at 4 (Nov. 15, 2016).

<sup>83</sup> *Id.*

<sup>84</sup> This is in contrast to the lack of new scientific developments that would warrant a different analysis in terms of *setting* the HHC, as discussed above in Part III.

<sup>85</sup> VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY, POLLUTION MINIMIZATION PLAN TECHNICAL RESOURCE GUIDE 22-45 (Mar. 11, 2016) (compiling "a list of methods that have been shown to successfully remediate PCBs across different matrices, including an additional section addressing methods used to remediate PCB contamination in effluent and waste streams") [hereinafter VDEQ, PCB POLLUTION MINIMIZATION TECHNOLOGIES].

<sup>86</sup> Compare *id.* at 39-45; 50-55 (citing studies from 2013 to 2016 documenting recent developments in four of the six categories of PCB treatment technologies) with HDR ENGINEERING, INC. TREATMENT TECHNOLOGY REVIEW & ASSESSMENT, 11-12; 48-50 (Dec. 4, 2013) (not mentioning these studies of PCB treatment technologies dating from 2013 and beyond).



effective remediation methods are highly sought after. Therefore, new methods and technologies to treat PCB contamination continue to be developed.”<sup>87</sup>

The State of Washington would like to get on with the business of implementation, as noted above. The tribes have also indicated their desire to move ahead and their willingness to work with the state toward implementing the new standards in innovative and effective ways. Reconsideration of these standards at the federal level should not now stand as an obstacle to this local effort. Rather, we should be permitted to join now to foster technological development and to ensure clean, fishable waters in Washington.

#### **V. Water Quality Standards for Washington Must Comport with the Constitution, Treaties, and Other Relevant Laws**

Water quality standards for Washington, whether set by the state or by EPA, must comport with the Constitution, treaties, and other relevant laws. In an attempt to avoid this legal reality, the Petition mischaracterizes the place of EPA guidance in the relevant legal hierarchy. The Petition also misrepresents the body of federal caselaw interpreting the fishing clause of the treaties between the U.S. and the tribes of the Pacific Northwest.

The Supremacy Clause of the U.S. Constitution plainly states:

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and *all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land*; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.<sup>88</sup>

In 1832, the U.S. Supreme Court affirmed in the fountainhead Indian law case *Worcester v. Georgia* that treaties between the United States and Indian nations indeed partake of this constitutional supremacy.<sup>89</sup> In the 1850s, the Indian nations of the Pacific Northwest entered into treaties ceding lands to the United States, while reserving a suite of important pre-existing rights, including their

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<sup>87</sup> VDEQ, PCB POLLUTION MINIMIZATION TECHNOLOGIES, at 45.

<sup>88</sup> U.S. Const. art. VI, clause 2 (emphasis added).

<sup>89</sup> *Worcester v. Georgia*, 31 U.S. (6 Pet.) 515, 519 (1832) (“The constitution [declares] treaties already made, as well as those to be made, the supreme law of the land . . .”). As the *Worcester* Court elaborated, “[s]o long as ... treaties exist, having been formed within the sphere of federal powers, they must be respected and enforced by the appropriate organs of the federal government.” *Worcester*, 31 U.S. (6 Pet.) at 594. Congress reflects this fundamental point in the Clean Water Act, expressly providing that the Act “shall not be construed as ... affecting or impairing the provisions of any treaty of the United States.” 33 U.S.C. §1371.

aboriginal rights to fish, hunt, and gather.<sup>90</sup> The Treaty of Point Elliott, for example, provides that “[t]he right of taking fish at usual and accustomed grounds and stations is further secured to said Indians in common with all citizens of the Territory....”<sup>91</sup> Although the precise language of the fishing clause varies somewhat in the different treaties with the tribes of the Pacific Northwest, U.S. courts have interpreted these provisions similarly to secure to the tribes a permanent, enforceable right to take fish throughout their fishing areas for ceremonial, subsistence and commercial purposes.<sup>92</sup> Moreover, the U.S. Supreme Court has long affirmed that all of the rights not expressly relinquished by the tribes were retained.<sup>93</sup> As it stated in 1905, the treaties represent “not a grant of rights to the Indians, but a grant of rights *from* them – a reservation of those not granted.”<sup>94</sup> That is, the fishing rights of the Northwest Treaty Tribes not only pre-date the treaties, but are protected by the treaties that are the supreme law of the land. Accordingly, and in keeping with the unique Indian law canons that govern courts’ construction of the treaties,<sup>95</sup> for more than a century, the courts have regularly interpreted the fishing right as more than just a naked right to engage in the activity of fishing; it is “a reserved right ... which exists in part to provide a volume of fish which is sufficient to the fair needs of the tribes.”<sup>96</sup>

EPA thus appropriately observed in its proposed rule:

In determining whether WQS comply with the CWA and EPA’s regulations, when setting criteria to support the most sensitive use in Washington, it is necessary to consider other applicable laws, including federal treaties. In Washington, many tribes hold reserved rights to take fish for subsistence, ceremonial, religious, and commercial purposes, including treaty reserved rights to fish at all usual and accustomed fishing grounds and stations in waters under state jurisdiction, which cover the majority of waters in the state. Such rights include not only a right to take those fish, but necessarily include an attendant right to not be exposed to unacceptable health risks by consuming those fish.<sup>97</sup>

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<sup>90</sup> FELIX COHEN, HANDBOOK OF FEDERAL INDIAN LAW 1154-56 (2012 ed.). The tribes’ rights have both on- and off-reservation components.

<sup>91</sup> Treaty with the Duwamish, Jan. 22, 1855, U.S.-Duwamish, art. V, 12 Stat. 927 (1859).

<sup>92</sup> See, e.g., *United States v. Washington*, 384 F. Supp. 312, 401 (W.D. Wash. 1974); *Washington v. Washington State Commercial Passenger Fishing Vessel Ass’n*, 443 U.S. 658, 674-85 (1979).

<sup>93</sup> See COHEN, at 1156-57 (discussing this longstanding and central tenet of federal Indian law).

<sup>94</sup> *United States v. Winans*, 198 U.S. 371, 381 (1905) (emphasis added).

<sup>95</sup> According to the canons, treaties should be construed liberally in favor of Indian tribes; they should be construed as the Indians would have understood them; and any ambiguities should be resolved in the tribes’ favor. COHEN, at 113-19, 1156. (“The canons have quasi-constitutional status; they provide an interpretive methodology for protecting fundamental constitutive, structural values against all but explicit congressional derogation.”); *id.* at 118-19.

<sup>96</sup> See, e.g., *United States v. Washington*, 384 F. Supp. at 401; accord *United States v. Washington*, 573 F.3d 701, 704 (9th Cir. 2009).

<sup>97</sup> 80 Fed. Reg. at 55066 (citation omitted).

EPA's rationale here echoes exactly that of the courts, which have long recognized that the tribes' continued ability to consume fish for their own subsistence or to earn a livelihood by selling fish to others for their consumption was an essential point of the treaty guarantees.<sup>98</sup> As the U.S. Supreme Court observed in *Washington v. Washington State Commercial Passenger Fishing Vessel Association*, "[i]t is perfectly clear that the Indians were vitally interested in protecting their right to take fish at usual and accustomed places whether on or off the reservations, and that they were invited by the white negotiators to rely, and did in fact rely, heavily on the good faith of the United States to protect that right."<sup>99</sup> The Court found, moreover, that "Governor [Stevens'] promises that the treaties would protect that source of food and commerce were crucial in obtaining the Indians' assent."<sup>100</sup> Thus, as courts have emphasized, important among the myriad facets of tribes' reserved fishing rights is the role of fish as food for human consumption.<sup>101</sup> Fish that has been rendered unsafe due to toxic contamination is, obviously, not fit for human consumption.

The Petition, remarkably, portrays EPA's recognition of the need to "effectuate and harmonize" standards under the CWA with tribes' treaty-reserved fishing rights<sup>102</sup> as a "new" and "invented" "post-hoc rationalization."<sup>103</sup> Yet, the treaties have been in force since the 1850s. Federal caselaw upholding the treaties' status and import dates from the 19<sup>th</sup> and early 20<sup>th</sup> centuries. Both the state and EPA are bound by the Constitution and by the laws of the land, which include treaties with Indian nations. In administering the CWA, EPA cannot waive the Constitution, and cannot ignore the treaties and the body of federal caselaw interpreting the treaties. It simply does not have this authority.

In fact, the federal government has long acknowledged its obligation to work to further tribal self-determination and honor tribal treaty-secured and other rights. Every president since President Nixon has supported tribal self-determination and acknowledged the federal government's unique trust relationship with the tribes – a relationship that stems in part from the treaties and other sovereign compacts entered into by the U.S. and Indian nations.<sup>104</sup> Under President Reagan, EPA

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<sup>98</sup> For a discussion of the supporting caselaw, see, e.g., Federal Indian Law Professors, Comments on the United States Environmental Protection Agency's Proposed Rule: Revision of Certain Water Quality Criteria Applicable to the State of Washington, at nn. 28-35 and accompanying text (Dec. 28, 2015), EPA-HQ-OW-2015-0174-0258.

<sup>99</sup> 443 U.S. at 667.

<sup>100</sup> *Id.* at 676.

<sup>101</sup> *Accord Lac Courte Oreilles Band of Lake Superior Chippewa Indians v. Wisconsin*, 653 F. Supp. 1420, 1426 (W.D. Wis. 1987) (By dint of the 1837 and 1842 treaties, the Chippewa were "guaranteed the right to make a moderate living off the land and from the waters in and abutting the ceded territory and throughout that territory by engaging in hunting, fishing, and gathering as they had in the past and by consuming the fruits of that hunting, fishing, and gathering or by trading the fruits of that activity for goods they could use and consume in realizing that moderate living").

<sup>102</sup> 81 Fed. Reg. at 85424.

<sup>103</sup> Petition, at 19.

<sup>104</sup> Message from the President of the United States Transmitting Recommendations for Indian Policy, H.R. Doc. No. 363, 91<sup>st</sup> Cong., 2d. Sess. (1970); 116 Cong. Rec. 23258.

first set forth its *EPA Indian Policy* in 1984.<sup>105</sup> This policy has been reaffirmed in subsequent administrations, irrespective of political party.<sup>106</sup> Its contours have been elaborated and refined over time, evolving in line with executive directives and developments in federal court caselaw interpreting the treaties.<sup>107</sup>

Against this backdrop, EPA correctly recognized that its general guidance is precisely that: general guidance. Yet the Petition repeatedly cites EPA's Ambient Water Quality Criteria Methodology (2000 AWQC Guidance) as purporting to give broad license to the state, and to authorize the state and EPA to take actions in contravention of the Constitution and tribal treaties. This turns the legal hierarchy on its head. Rather, the 2000 AWQC Guidance must be considered subsidiary to applicable sources of law, including the Constitution and tribal treaties. And it must be applied in accordance with the particular factual and legal circumstances pertaining to the water quality standards at issue – here, water quality standards for the state of Washington. EPA's 2000 AWQC Guidance acknowledges these points, expressly stating as much at the outset.<sup>108</sup>

EPA's rulemaking appropriately comprehends the subsidiary and general nature of its guidance, and the need to consider Washington's particular factual and legal circumstances. In proposing its rule for Washington, EPA observed that "the EPA's 2000 Human Health Methodology did not consider how CWA decisions should account for applicable reserved fishing rights, including treaty-reserved rights."<sup>109</sup> Indeed, EPA specifically stated at the time the 2000 AWQC Guidance was being drafted that "[a]s stated in the 1998 draft Methodology revisions, 'risk levels and criteria need to be protective of tribal rights under federal law (e.g., fishing, hunting, or gathering rights) that are related to water quality.' We believe the best way to ensure that Tribal treaty and other rights under Federal law are met, consistent with the Federal trust responsibility, is to address these

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<sup>105</sup> U.S. Environmental Protection Agency, *EPA Policy for the Administration of Environmental Programs on Indian Reservations* (November 8, 1984).

<sup>106</sup> See, e.g., U.S. Environmental Protection Agency, *Commemorating the 30th Anniversary of the EPA's Indian Policy*, Memorandum from Gina McCarthy to All EPA Employees, 1 (Dec. 1, 2014) (reiterating that "EPA must ensure that its actions do not conflict with tribal treaty rights" and stating that "EPA programs should be implemented to enhance the protection of tribal treaty rights and treaty-covered resources when we have the discretion to do so").

<sup>107</sup> See, e.g., U.S. Environmental Protection Agency, *Working Effectively with Tribal Governments: Resource Guide* at 49–52, 53 (Aug. 1998) (explaining the key principles underlying the application of tribal treaty rights, and noting that "[f]ederal, state, and local agencies need to refrain from taking actions that are not consistent with tribal rights wherever they exist").

<sup>108</sup> U.S. Environmental Protection Agency, *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health 1-2 (2000)* [hereinafter *EPA, AWQC Guidance*], [http://water.epa.gov/scitech/swguidance/standards/upload/2005\\_05\\_06\\_criteria\\_humanhealth\\_method\\_complete.pdf](http://water.epa.gov/scitech/swguidance/standards/upload/2005_05_06_criteria_humanhealth_method_complete.pdf) (making a disclaimer at the outset of its guidance to this effect: "This Methodology does not substitute for the CWA or EPA's regulations; nor is it a regulation itself. Thus, the 2000 Human Health Methodology cannot impose legally-binding requirements on EPA, States, Tribes or the regulated community, and may not apply to a particular situation based upon the circumstances.").

<sup>109</sup> 80 Fed. Reg. at 55068.

issues at the time EPA reviews water quality standards submissions.”<sup>110</sup> This case-by-case approach enables EPA to take into account particular local factual and legal circumstances as well as developments in the science and the law since the 2000 AWQC Guidance was finalized.<sup>111</sup>

In deriving human health criteria for Washington, EPA correctly stated that:

A majority of waters under Washington’s jurisdiction are covered by reserved rights, including tribal treaty-reserved rights. Many areas where reserved rights are exercised cannot be directly protected or regulated by the tribal governments and, therefore, the responsibility falls to the state and federal governments to ensure their protection. In order to effectuate and harmonize these reserved rights, including treaty rights, with the CWA, EPA determined that such rights appropriately must be considered when determining which criteria are necessary to adequately protect Washington’s fish and shellfish harvesting designated uses.<sup>112</sup>

EPA appropriately concluded that, as required by its implementing regulations, the HHC would need to support the most sensitive of Washington’s designated uses,<sup>113</sup> and thus not impair tribes’ treaty-secured rights to take fish for subsistence purposes.<sup>114</sup> As EPA noted, protecting this tribal population implements the 2000 AWQC Guidance recommendation “that priority be given to identifying and adequately protecting the most highly exposed population.”<sup>115</sup>

Notably, EPA’s application of its general guidance to Washington’s particular circumstances rests on findings that echo the state’s own. Washington itself has recognized that tribes’ adjudicated usual and accustomed areas cover virtually all of the waters over which the state claims jurisdiction under

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<sup>110</sup> 65 Fed. Reg. 66444, 66457 (Nov. 3, 2000).

<sup>111</sup> The Suquamish Tribe’s 2000 fish consumption survey, for example, post-dates studies cited in the 1998 Technical Support Document for the EPA’s 2000 AWQC Guidance. *Compare* Suquamish Survey with OFFICE OF SCIENCE AND TECHNOLOGY, U.S. ENVIRONMENTAL PROTECTION AGENCY, AMBIENT WATER QUALITY CRITERIA DERIVATION METHODOLOGY: HUMAN HEALTH, TECHNICAL SUPPORT DOCUMENT (1998). Both Ecology and EPA cited the Suquamish survey in deriving the FCR applicable for WQS in Washington.

<sup>112</sup> 80 Fed. Reg. at 55067 (citations and internal cross-references omitted).

<sup>113</sup> 40 C.F.R. 131.11(a).

<sup>114</sup> EPA has, at least since its 2000 AWQC Guidance, signaled that subsistence consumption needs to be protected in WQS for which the designated fish and shellfish harvesting uses encompass subsistence fishing. EPA, AWQC Guidance, at 1-12 & 1-13 (setting forth two national default fish consumption rates, one for the general population and one, at 142.4 grams/day, for “subsistence” consumers); *see also* U.S. Environmental Protection Agency Region X, Framework for Selecting and Using Tribal Fish and Shellfish Consumption Rates for Risk-Based Decision Making at CERCLA and RCRA Cleanup Sites for Puget Sound and the Strait of Georgia 1, 6-7 (Aug., 2007) (stating that “EPA believes that the rates developed from the [available Puget Sound Tribal studies] should be used in preference to an estimate of an average subsistence consumption rate, as recommended in the EPA AWQC methodology.”)

<sup>115</sup> 81 Fed. Reg. at 85424.

the CWA.<sup>116</sup> As Ecology stated in its final *Fish Consumption Rates Technical Support Document* prepared in support of its WQS rule, “Washington is home to 29 federally recognized and seven non-federally recognized Native American tribes (Governor’s Office of Indian Affairs, 2010). Traditional fishing areas for tribes cover essentially all of Washington.”<sup>117</sup>

Washington itself has recognized the need to manage its fisheries and undertake environmental regulation in a manner that is cognizant of tribes’ treaty-secured rights to harvest and consume fish and shellfish. Washington’s Department of Fish & Wildlife, for example, explains on its website that it co-manages salmon harvest and restoration with the tribes, in a relationship framed by Judge Boldt in *U.S. v. Washington* to uphold the tribes’ treaty-reserved rights.<sup>118</sup> Washington’s Sediment Management Standards (SMS), for example, direct that the cleanup level for human health “shall be calculated using reasonable maximum exposure scenarios that reflect the highest exposure that is reasonably expected to occur under current and potential future site use conditions,” and set a statewide default exposure scenario of “tribal consumption of fish and shellfish.”<sup>119</sup> The SMS further require Ecology to consider the “[h]istoric, current, and potential future tribal use of fish and shellfish from the general vicinity of the site” in selecting or approving exposure parameters used to calculate this scenario.<sup>120</sup> And Ecology’s final *Fish Consumption Rates Technical Support Document* introduced its scientific review of the available surveys of contemporary fish consumption in support of its revision to its WQS with the following “problem statement:”

Washington’s aquatic resources provide tremendous benefit to the people of the state. Large quantities of finfish and shellfish are caught each year, both recreationally and commercially, and many residents eat seafood harvested from our waters. *In addition, tribal populations enjoy treaty fishing rights, and harvesting and eating seafood plays a significant role in their cultures.* Finfish and shellfish are important parts of a healthy diet.

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<sup>116</sup> Insofar as the state asserts environmental regulatory authority over “the waters of Washington,” these waters are burdened by tribes’ pre-existing rights. For state recognition of this point, see, e.g., Washington State Governor’s Office of Indian Affairs, “Map of Reservations and Ceded Lands,” available at [http://www.goia.wa.gov/tribal\\_gov/documents/Tribal\\_Cedres.pdf](http://www.goia.wa.gov/tribal_gov/documents/Tribal_Cedres.pdf); see also, Washington State Department of Transportation, Model Comprehensive Tribal Consultation Process for National Environmental Policy Act, Appendix B (July 2008) available at <http://www.wsdot.wa.gov/environment/tribal> (summarizing adjudicated “usual and accustomed” areas for western Washington tribes).

<sup>117</sup> Washington Department of Ecology, Fish Consumption Rates Technical Support Document Version 2.0 (Final) 18 (Jan. 2013) <https://fortress.wa.gov/ecy/publications/publications/1209058.pdf> (emphasis added).

<sup>118</sup> Washington Department of Fish & Wildlife, How Tribes and State Co-Manage Salmon and Steelhead <http://wdfw.wa.gov/conservation/salmon/co-management/index.html> (stating that “Washington’s salmon and steelhead fisheries are managed cooperatively in a unique government-to-government relationship ... A 1974 federal (*U.S. v. Washington*) court case (decided by U.S. District Court Judge George Boldt) re-affirmed the tribe’s [sic] rights to harvest salmon and steelhead and established them as co-managers of Washington fisheries”).

<sup>119</sup> Sediment Management Standards, WAC 173-204-561(2)(b).

<sup>120</sup> *Id.*

Polychlorinated biphenyls (PCBs), dioxins, mercury, and other persistent chemicals can accumulate in fish tissue and harm the health of people who consume fish. Those who may be particularly vulnerable include adults who eat large amounts of finfish or shellfish, as well as children and other sensitive populations. Current fish consumption rates used by Ecology to make regulatory decisions are not consistent with data about fish consumption by Washington populations for which fish consumption survey information is available.<sup>121</sup>

Further, EPA's rule enlists "Washington-specific human health criteria inputs" that are identical to those selected by Washington for the two key parameters used to derive HHC – the fish consumption rate and the cancer risk level. EPA's FCR of 175 gram/day is based on the wealth of local and regional survey data documenting contemporary<sup>122</sup> consumption rates for tribes and other higher-consuming populations. These data were analyzed by and relied upon by Ecology in deriving the HHC that it submitted, using a FCR of 175 grams/day. EPA's cancer risk level of 1 in 1,000,000, that is,  $1 \times 10^{-6}$  is based on the level long embraced by Washington. Specifically, for more than two decades, Washington's WQS required that criteria for carcinogens "shall be selected such that the upper-bound excess cancer risk is less than or equal to 1 in 1,000,000."<sup>123</sup> Ecology retained this cancer risk level generally in the HHC it submitted.<sup>124</sup>

In sum, the Petition's request for reconsideration of EPA's decisions respecting WQS for Washington is premised on arguments that purport to elevate guidance over the Constitution, treaties, and other laws that are relevant to standard-setting under the CWA in this context, and on arguments that misrepresent the relevant federal caselaw regarding interpretation of the treaty fishing clause. These arguments are without merit, and do not provide a rational basis for reconsideration.

## VI. Conclusion

NWIFC respectfully urges that EPA deny the Petition's request to undo the extensive work that has been done to update WQS for Washington. The state is not seeking to discard this work – it has not joined industry's attempt to rehash the arguments that have already been considered at length in robust state and federal processes. Rather than embark on yet another round of rulemaking, the

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<sup>121</sup> Washington Department of Ecology, Fish Consumption Rates Technical Support Document Version 2.0 Final xiii (Jan. 2013) <https://fortress.wa.gov/ecy/publications/publications/1209058.pdf> (emphasis added).

<sup>122</sup> The Petition mistakenly characterizes this FCR as "unsuppressed." Petition, at 25. While EPA's rule appropriately recognizes the need to account for suppression effects, the 175 grams/day figure is drawn from the CRITFC survey of *contemporary* fish intake. See 81 Fed. Reg. at 85426 ("A FCR of 175 grams/day approximates the 95<sup>th</sup> percentile consumption rate of surveyed tribal members from the CRITFC study.") For a thorough discussion of the issue of suppression in this context, see NWIFC, Comments on Ecology's Draft Rule, at 13-30, & App. C.


<sup>123</sup> Wash. Admin. Code 173-201A-240(6) (2015).

<sup>124</sup> As discussed above, Ecology departed from its longstanding judgement regarding the "acceptable" cancer risk level for a few contaminants of concern, notably PCBs.

tribes, like Washington, would like to look toward the future. The EPA should not now introduce obstacles to progress at the local level by the state and its partners.<sup>125</sup> The Northwest Treaty Tribes are optimistic that, with our combined energies bent toward innovative and effective implementation, we can have “fishable” waters throughout Washington – waters that can support harvest and consumption not only by tribal people but by non-tribal people as well.

Our tribal leaders look forward to engaging you and your team to discuss this matter and the appropriate actions to protect our precious environment and resources.

Sincerely,



Lorraine Loomis  
Chairperson

Enclosure: Northwest Indian Fisheries Commission, Comments on the Washington Department of Ecology’s 2016 Draft Rule for Human Health Criteria and Implementation Tools in Washington Water Quality Standards (April 20, 2016).

cc: Craig Alexander, U.S. Department of Justice  
Paul Winters, Office of Management and Budget  
Michelle Pirzadeh, U.S. Environmental Protection Agency, Region 10  
Maia Bellon, Washington State Department of Ecology  
Chairs of the NWIFC Member Tribes

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<sup>125</sup> Indeed, this EPA has itself recently indicated its interest in moving on: in May, 2017, it relied upon having these updated HHC in force and cited their function in addressing toxic contamination in Washington waters among its reasons for denying an environmental group’s request for rulemaking on human health and aquatic life criteria. Letter from Michael H. Shapiro, Acting Assistant Administrator, U.S. Environmental Protection Agency, to Nina Bell, Executive Director, Northwest Environmental Advocates (May 31, 2017).



**From:** Bellatty, James (ECY) [JBEL461@ECY.WA.GOV]  
**Sent:** 2/23/2017 8:08:47 PM  
**To:** Psyk, Christine [Psyk.Christine@epa.gov]  
**Subject:** FW: News release re: petition to reconsider water quality standards

FYI

FOR IMMEDIATE RELEASE: February 21, 2017

## **EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

*Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable*

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.

"We are all committed to clean water," said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today's action. "Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders' input. The existing EPA rule fails on all these grounds."

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

"From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable," McCabe said. "We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance."

"We were extremely disappointed when EPA's rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state's own rule offers a more realistic and feasible approach to water quality."

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. “The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone’s efforts to improve environmental and health outcomes for Washington residents,” she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA’s new standards. This could put facility operations in jeopardy and dampen employers’ ability to create new jobs, as well as to retain existing ones. “This is an issue that touches every person in every community in Washington state,” said Kris Johnson, President and CEO of the Association of Washington Business. “In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them.”

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

“Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members,” said Washington Farm Bureau CEO John Stuhlmiller. “But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology’s challenging but achievable standards will deliver something that can work for the state.”

“We look forward to working with the state Department of Ecology to replace the EPA’s unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state,” Stuhlmiller concluded.

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Message

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**Sent:** 5/11/2019 12:04:32 PM  
**To:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**CC:** mgil461@ECY.WA.GOV; chbr461@ecy.wa.gov [CHBR461@ECY.WA.GOV]; Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]  
**Subject:** RE: NWEA lawsuit on Washington's toxics criteria  
**Attachments:** EPA Petition Response 6\_1\_17.pdf

Hi Cheryl,

By way of background, EPA was sued in February 2017 for failing to respond to NWEA's 2013 petition requesting that EPA promulgate ALC and HHC for WA. The following June we denied the entirety of the petition and mooted the lawsuit. There is no ongoing legal obligation on EPA's part but it is conceivable that NWEA could at some future point file a legal challenge to EPA's petition denial, particularly with respect to ALC.

Attached is the EPA's petition denial response. On the HHC, we explained that EPA's November 2016 action partially approving revised state criteria and promulgating federal criteria adequately addressed the petition. We noted in the petition that the 2016 action didn't address the petition with respect to thallium, dioxin and arsenic but this was due to ongoing scientific uncertainty. With respect to ALC, we acknowledged that Ecology had not updated the criteria for a number of years but had just completed a major HHC update and needed time to address the ALC. It would be nice if we can show progress on this front.

I hope this helps and please contact me or Lindsay if you have additional questions.

---

**Hanh Shaw** | Manager  
Water Quality Standards Unit  
Office of Water and Watersheds  
U.S. Environmental Protection Agency | Region 10  
**P:** 206-553-0171 | **E:** [shaw.hanh@epa.gov](mailto:shaw.hanh@epa.gov)

---

**From:** Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>  
**Sent:** Wednesday, March 27, 2019 11:42 AM  
**To:** Shaw, Hanh <Shaw.Hanh@epa.gov>  
**Cc:** mgil461@ECY.WA.GOV; chbr461@ecy.wa.gov  
**Subject:** NWEA lawsuit on Washington's toxics criteria

Hi Hahn.

We are putting together some information to assist with communication around the next triennial review. I am looking for information on how the 2013 NWEA lawsuit against EPA was resolved, and Chad recommended I contact you. The lawsuit addressed human health and aquatic life toxics, and the human health portion was resolved in 2016. Below is language from the NWEA website

(<https://www.northwestenvironmentaladvocates.org/newblog/places/washington/washington-water-quality-standards/>) describing the situation:

*"In 2013, NWEA also submitted a formal petition to EPA asking for federal involvement in bringing Washington's human health toxic standards into the new century. In addition, the NWEA petition asked EPA to update Washington's aquatic life toxic standards, which Ecology has shown no interest in doing. After EPA failed to respond to the petition for over three years, NWEA took EPA to court in 2017."*

Was any settlement or other resolution reached between NWEA and EPA on the aquatic life toxics portion? If so can you please provide me with the documents, or links to web sites to access them, and, information on the status of work associated with this?

Thanks,

Cheryl

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Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

This e-mail may be subject to public disclosure.

## Message

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**From:** Shaw, Hanh [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=60509321022B49A39F6F68DF62858DE-SHAW, HANH]  
**Sent:** 5/10/2019 10:08:33 PM  
**To:** mgil461@ECY.WA.GOV; Brown, Chad (ECY) [CHBR461@ECY.WA.GOV]  
**CC:** Guzzo, Lindsay [Guzzo.Lindsay@epa.gov]; Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** Notice: EPA approves Washington's 2016 human health criteria water quality standards  
**Attachments:** EPA Approval WA WQS HHC signed 5-10-2019.pdf

Today EPA announced that the agency has approved the human health criteria water quality standards that Washington State originally submitted to the agency in 2016 after determining the state's proposal is protective of its designated uses, based on sound science, and consistent with the Clean Water Act. The current federally-promulgated water quality standards for Washington will remain in effect until the agency completes the process to withdraw these standards. Today's action restores Washington's role as the primary authority for adopting water quality standards in the state and EPA remains committed to supporting the state on implementation of its water quality standards. The document is attached.

### Background

In August 2016, Washington State's Department of Ecology (Ecology) promulgated water quality standards and submitted them to EPA for approval. This submittal included 192 new human health criteria (HHC) for 97 priority pollutants that are applicable to all surface waters in the state. Ecology's 2016 standards were crafted after years of engagement and collaboration with EPA, stakeholders, and tribes.

In November 2016, EPA partially approved and partially disapproved Washington's water quality standards, approving 45 human health criteria (HHC), disapproving 143 HHC, and taking no action on four HHC. For the HHC that EPA disapproved, EPA finalized a federal rule for Washington in accordance with the Clean Water Act. These federal water quality standards are currently in effect in Washington.

In February 2017, EPA received a petition from several organizations to reconsider the agency's November 2016 partial disapproval. In August 2018, EPA decided to reconsider its 2016 partial disapproval of Washington's HHCs. Upon reconsideration, EPA, through today's action, has reversed the agency's 2016 partial disapproval of certain HHC (excluding arsenic).

EPA intends to propose to withdraw the federally promulgated criteria from the federal rule through a subsequent notice and comment rulemaking process.

More information: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington>

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Hanh Shaw | Manager  
Standards and Assessment Section  
Water Division  
U.S. Environmental Protection Agency | Region 10  
P: 206-553-0171 | E: [shaw.hanh@epa.gov](mailto:shaw.hanh@epa.gov)

Message

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**From:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**Sent:** 6/13/2016 3:52:49 PM  
**To:** Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Got your voice-mail. Thanks for looking into this! If I haven't heard anything from you by early afternoon I'll give you a call just to check in.

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

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**From:** Niemi, Cheryl (ECY)  
**Sent:** Wednesday, June 08, 2016 11:33 AM  
**To:** 'Szelag, Matthew' <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>  
**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Thank you!

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
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P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

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**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]  
**Sent:** Wednesday, June 08, 2016 11:17 AM  
**To:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>; Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>  
**Cc:** Gildersleeve, Melissa (ECY) <[MGIL461@ECY.WA.GOV](mailto:MGIL461@ECY.WA.GOV)>  
**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Hi Cheryl,  
We're looking into this – I'll try to get a response to you asap.

---

Matthew Szelag | Water Quality Standards Coordinator

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**From:** Niemi, Cheryl (ECY) [<mailto:cnie461@ECY.WA.GOV>]  
**Sent:** Wednesday, June 08, 2016 9:48 AM  
**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>; Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>  
**Cc:** [mgil461@ECY.WA.GOV](mailto:mgil461@ECY.WA.GOV)  
**Subject:** !!FW: Help please! HHC question on which chem is the priority pollutant  
**Importance:** High

Hi Matt and Angela.

I am really confused about the issue described in the e-mails below. I think that EPA's new 304(a) guidance chemical bis(2-chloro-1-methylethyl) ether is not a priority pollutant. I think EPA followed a CAS# path instead of the PP List in the CFR (which does not have CAS #'s). I am hoping you can help clarify me with this, and soon! We have to get any final rule language changes to the code reviser by the 14<sup>th</sup> of this month!! I added some highlight below to help summarize the quandary. Please call me if you have questions about this e-mail. Following the names and CAS #'s can be complicated.

We are getting close to done!

Thanks for your assistance.

Cheryl

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Cheryl A. Niemi  
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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

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**From:** Niemi, Cheryl (ECY)  
**Sent:** Wednesday, June 08, 2016 8:50 AM  
**To:** 'douglas.kolwaite@alaska.gov' <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>; 'Sonafrank, Nancy B (DEC)' <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; 'Tabor, Brock N (DEC)' <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Cc:** 'Don.Essig@deq.idaho.gov' <[Don.Essig@deq.idaho.gov](mailto:Don.Essig@deq.idaho.gov)>; [Kenneth.Weaver@dep.state.fl.us](mailto:Kenneth.Weaver@dep.state.fl.us); 'Kuhns, Mick' <[Mick.Kuhns@maine.gov](mailto:Mick.Kuhns@maine.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Thanks Doug for sending this on.

I looked at the IRIS page again but could not find anything from 2007. Below is a snip of the 1989 IRIS page I referred to in the table in my e-mail below:

## VIII. Synonyms

Substance Name — Bis(2-chloro-1-methylethyl) ether

CASRN — 108-60-1

Last Revised — 10/01/1989

- 108-60-1
- 2,2'-Oxybis(1-chloropropane)
- BCMEE
- beta, beta'-dichlorodiisopropyl ether
- Bis(1-chloroisopropyl) ether
- Bis(1-chloro-2-propyl) ether
- Bis(beta-chloroisopropyl) ether
- Bis(2-chloroisopropyl) ether [this synonym is also used with CASRN 39638-32-9]
- DCIP (nematocide)
- Dichlorodiisopropyl ether
- 2,2'-Dichlorodiisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- 2,2'-Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Ether, bis(2-chloro-1-methylethyl)
- HSDB 503
- NCI-C50044
- Nemamort
- Nemamorte
- Propane, 2,2'-oxybis(1-chloro-
- RCRA waste number U027

I went back and checked EPA's priority pollutant list and the CFR once again – just to be sure I was reading them correctly – and am still seeing that the named priority pollutant is bis(2-chloroisopropyl) ether, with no CAS number indicated.

The file you sent does reinforce that they are different compounds, and that EPA, at least in the IRIS database, made a decision to equate them.

So –

I am trying to get to the bottom of this because the CWA requires states to adopt criteria for priority pollutants that could be impacting uses, and in WA we have made the decision to adopt criteria for PPs that EPA has developed criteria now for (except meHg), regardless of whether they are impacting waters. But if this chemical is not on the PP list, regardless of what IRIS (or the EPA analytical methods group) has decided for their purposes, then I am not sure what to do about recommending or not recommending adoption of the criteria for bis(2-chloroisopropyl) ether. Especially since it is clear that the two chemicals are different, and because of that I cannot imagine why the text above is in IRIS. Maybe an error or again maybe something going on that I just haven't found the explanation for. However, the language in the CWA is pretty clear about the list of toxic pollutants, and EPA has moved that language on through to regulation that contains the list of PPs for CWA purposes, and I just can't find bis(2-chloro-1-methylethyl) ether on the PP list.



This web site has an excellent description of the CWA to CFR transition and links to recent lists: <https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act> .

I will think about this some more and then probably send it on to EPA soon.

If anyone has additional info to add I'd be grateful.

Don-- thanks for your response in a separate e-mail. If EPA means to refer to bis(2-chloro-1-methylethyl) ether then why don't they modify the CFR to add it to the PP list, or at least provide an explanation of it in the new criteria document for that chemical? The language on the CWA and CFRs set out the legal requirements, and the new criteria by EPA are just guidance values. Is EPA aware of the discrepancy?

Cheryl

---

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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

---

**From:** Kolwaite, Douglas S (DEC) [<mailto:douglas.kolwaite@alaska.gov>]  
**Sent:** Tuesday, June 07, 2016 2:34 PM  
**To:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

---

**From:** Kolwaite, Douglas S (DEC)  
**Sent:** Tuesday, June 07, 2016 1:32 PM  
**To:** 'mailto:cnie461@ECY.WA.GOV' <<mailto:cnie461@ECY.WA.GOV>>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

Cheryl,

The ethyl is the priority pollutant. The isopropyl likely doesn't make it into environment without reacting.

The attached discussion from NELAC might be helpful.

Doug

---

**From:** Sonafrank, Nancy B (DEC)  
**Sent:** Tuesday, June 07, 2016 1:23 PM  
**To:** Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>; Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

I haven't run across that discrepancy before. I agree they are two different compounds. I am not sure we can help her on which is the priority pollutant.

---

**From:** Tabor, Brock N (DEC)  
**Sent:** Tuesday, June 07, 2016 8:47 AM  
**To:** Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Doug- can you take a look at this question from Cheryl? Way outside of my field.

Nancy's background might help if you're not familiar either.

Thank you!

---

**From:** Niemi, Cheryl (ECY) [<mailto:cnie461@ECY.WA.GOV>]  
**Sent:** Tuesday, June 07, 2016 8:43 AM  
**To:** [Kenneth.Weaver@dep.state.fl.us](mailto:Kenneth.Weaver@dep.state.fl.us); [Don.Essig@deq.idaho.gov](mailto:Don.Essig@deq.idaho.gov); Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>;  
Kuhns, Mick <[Mick.Kuhns@maine.gov](mailto:Mick.Kuhns@maine.gov)>  
**Subject:** Help please! HHC question on which chem is the priority pollutant

Hi all.

I have found a puzzle and hoping one of you might have seen this HHC oddity and might have resolved in already. Please see the information below and, hopefully, tell me you have already figured out the answer – or – maybe I am just not reading the circumstances correctly?!

If this is real then I need to figure out whether this will affect final rule language in our state HHC rule, and also figure out what it might mean for EPA's proposed rule for WA.

Sometimes, when I e-mail, snips they end up in different places on the recipient's e-mail. If it looks like things are out of place let me know and I will copy into a Word file and resend.

Thank you!

Cheryl

---

**Below is info that describes the oddity I have come upon:**

Two different compounds are at issue here. Same molecular weight and same elemental make-up but chemical structure is different. Please note which carbon the Cl is attached to in the two pictures below:

Here is NIST page for Bis(2-chloroisopropyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> NIST Bis(2-chloroisopropyl) ether

File Edit View Favorites Tools Help

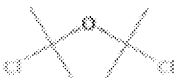
<http://resources.regulation...> <http://resources.regulation...> Vault - Search Retention Schedule Access WA Google

**NIST**  
National Institute of  
Standards and Technology

**MATERIAL  
MEASUREMENT  
LABORATORY**

Star

## Bis(2-chloroisopropyl) ether

- Formula:  $C_6H_{12}Cl_2O$
- Molecular weight: 171.065
- IUPAC Standard InChI:
  - InChI=1S/C6H12Cl2O/c1-5(2,7)9-6(3,4)8/h1-4H3
  - Download the identifier in a file.
- IUPAC Standard InChIKey: BULHJTXR2FEUDQ-UHFFFAOYSA-N
- CAS Registry Number: 39638-32-9
- Chemical structure:
 

This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- Other names: Propane, 2,2'-oxybis[2-chloro-; Propane, 2,2'-oxybis\*2-chloro-; 2,2'-oxybis[2-chloropropane]
- Permanent link for this species. Use this link for bookmarking this species for future reference.
- Information on this page:
  - Notes / Error Report
- Other data available:
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- Options:
  - Switch to calorie-based units

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CERTIFIED  
2011

Here is NIST page for Bis(2-chloro-1-methylethyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> NIST Bis(2-chloro-1-methylethyl) ether

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<http://resources.regulation...> <http://resources.regulation...> Vault - Search Retention Schedule Access WA Google

**NIST**  
National Institute of  
Standards and Technology


**MATERIAL  
MEASUREMENT  
LABORATORY**

Standard Reference  
Data Program

Data  
Gateway

Chemistry  
Webbook

## Bis(2-chloro-1-methylethyl) ether

- Formula:  $C_8H_{16}Cl_2O$
- Molecular weight: 171.065
- IUPAC Standard InChI:
  - InChI=1S/C8H16Cl2O/c1-5(3-7)9-6(2)4-8/h3-6H, 3-4H2, 1-2H3
  - Download the identifier in a file.
- IUPAC Standard InChIKey: QPFCCTYNLQST-UHFFFAOYSA-N
- CAS Registry Number: 108-60-1
- Chemical structure:
 

This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- Other names: Propane, 2,2'-oxybis[1-chloro-; Ether, bis(2-chloro-1-methylethyl); 3,3'-Dichlorodisopropyl ether; DCIP; DCBP (Nematocide); 2,2'-Dichlorodisopropyl ether; (2-Chloro-1-methylethyl) ether; Bis(β-chloroisopropyl) ether; Dichlorodisopropyl ether; Dichloroisopropyl ether; NC1-C50044; 2,2'-Dichloroisopropyl ether; Bis(1-chloro-2-propyl) ether; NSC 2849
- Permanent link for this species. Use this link for bookmarking this species for future reference.
- Information on this page:
  - Notes / Error Report
- Other data available:
  - Phase change data
  - Henry's Law data
  - IR Spectrum
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- Options:
  - Switch to calorie-based units

InChI TRUST  
CERTIFIED  
2011

Here is EPA's Priority Pollutant (PP) List as of 2014: <https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf>.

The PP on this list is:

42. Bis(2-chloroisopropyl) ether

Here is the 2014 CFR with the PP list: <https://www.gpo.gov/fdsys/pkg/CFR-2014-title40-vol29/pdf/CFR-2014-title40-vol29-part423-appA.pdf>

The PP on this list is:

042 Bis(2-chloroisopropyl) ether

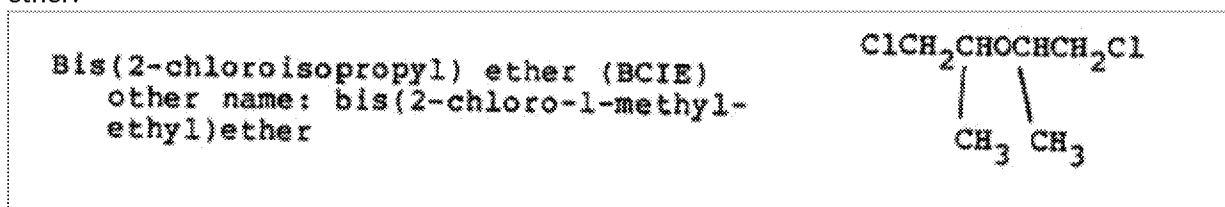
<Note: The CAS #'s are not indicated on the PP lists.>

Some EPA history:

Date/publication	CAS	Chemical	Notes
1980 NRWQC <i>Ambient Water Quality Criteria for Chloroalkyl Ethers</i> EPA 440/5-80-030 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF</a>	Not indicated	Bis(2-chloroisopropyl)ether	Page 10 of 11 the bis(2-chloroisopropyl) ether is a chemical.
1989 EPA IRIS, see page 6 <a href="https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf">https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	On page 6 of 11 represents bis(2-chloro-1-methylethyl) ether is a chemical. ----- ----- ----- I can't find the IRIS summary for 108-60-1. 396
1992 NTR (chem #67)	108-60-1	Bis(2-chloroisopropyl)ether	
2002 matrix EPA-822-R-02-012, page 9 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	On page 9 of 11 table 1 "Bis(2-chloroisopropyl) ether"

			60-396
2002 NRWQC EPA-822-R-02-047, page 16 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	
2015 NRWQC <a href="https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212">https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	EPA ind
EPA's 2015 proposed regulation for WA <a href="https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf">https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	The is: * B Me wa as l Chl Eth

The structure below, from the 1980 criteria document, corresponds to the structure of bis(2-chloro-1-methylethyl) ether:



I think that the actual PP is bis(2-chloroisopropyl)ether (based on the CFR language – which does not contain CAS #'s) and that the correct CAS# is 39638-32-9. If this is so, what is the correct toxicity value for this compound? The two chemicals are indicated to be synonyms in IRIS, but I think this is incorrect. The placement of the chlorines is different, and the toxicity might also be different. I also checked this with a chemist here just to make sure I was thinking straight. He compared the structure of the two compounds and he agrees they are different.

So here is what I think the criteria status might be:

	EPA's new 2015 criteria: Bis(2-chloro-1-methylethyl)ether CAS 108-60-1	Older EPA criteria (with corrected CAS #): Bis(2-chloroisopropyl)ether CAS 39638-32-9
Priority pollutant?	No	Yes
New 2015 recommended EPA criteria?	Yes	No

Is there something here that I am not seeing that makes this a straightforward solution or is it as odd as I am perceiving it to be?

**Thanks for looking at this!**

---

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[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

Message

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**From:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**Sent:** 6/8/2016 4:48:18 PM  
**To:** Szelag, Matthew [Szelag.Matthew@epa.gov]; Chung, Angela [Chung.Angela@epa.gov]  
**CC:** mgil461@ECY.WA.GOV  
**Subject:** !!FW: Help please! HHC question on which chem is the priority pollutant  
**Attachments:** Ether Question.pdf

**Importance:** High

Hi Matt and Angela.

I am really confused about the issue described in the e-mails below. I think that EPA's new 304(a) guidance chemical bis(2-chloro-1-methylethyl) ether is not a priority pollutant. I think EPA followed a CAS# path instead of the PP List in the CFR (which does not have CAS #'s). I am hoping you can help clarify me with this, and soon! We have to get any final rule language changes to the code reviser by the 14<sup>th</sup> of this month!! I added some highlight below to help summarize the quandary. Please call me if you have questions about this e-mail. Following the names and CAS #'s can be complicated.

We are getting close to done!

Thanks for your assistance.

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
cheryl.niemi@ecy.wa.gov

Note: This e-mail may be subject to public disclosure.

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**From:** Niemi, Cheryl (ECY)  
**Sent:** Wednesday, June 08, 2016 8:50 AM  
**To:** 'douglas.kolwaite@alaska.gov' <douglas.kolwaite@alaska.gov>; 'Sonafrank, Nancy B (DEC)' <nancy.sonafrank@alaska.gov>; 'Tabor, Brock N (DEC)' <brock.tabor@alaska.gov>  
**Cc:** 'Don.Essig@deq.idaho.gov' <Don.Essig@deq.idaho.gov>; Kenneth.Weaver@dep.state.fl.us; 'Kuhns, Mick' <Mick.Kuhns@maine.gov>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Thanks Doug for sending this on.

I looked at the IRIS page again but could not find anything from 2007. Below is a snip of the 1989 IRIS page I referred to in the table in my e-mail below:

## VIII. Synonyms

Substance Name — Bis(2-chloro-1-methylethyl) ether

CASRN — 108-60-1

Last Revised — 10/01/1989

- 108-60-1
- 2,2'-Oxybis(1-chloropropane)
- BCMEE
- beta, beta'-dichlorodiisopropyl ether
- Bis(1-chloroisopropyl) ether
- Bis(1-chloro-2-propyl) ether
- Bis(beta-chloroisopropyl) ether
- Bis(2-chloroisopropyl) ether [this synonym is also used with CASRN 39638-32-9]
- DCIP (nematocide)
- Dichlorodiisopropyl ether
- 2,2'-Dichlorodiisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- 2,2'-Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Ether, bis(2-chloro-1-methylethyl)
- HSDB 503
- NCI-C50044
- Nemamort
- Nemamorte
- Propane, 2,2'-oxybis(1-chloro-
- RCRA waste number U027

I went back and checked EPA's priority pollutant list and the CFR once again – just to be sure I was reading them correctly – and am still seeing that the named priority pollutant is bis(2-chloroisopropyl) ether, with no CAS number indicated.

The file you sent does reinforce that they are different compounds, and that EPA, at least in the IRIS database, made a decision to equate them.

So –

I am trying to get to the bottom of this because the CWA requires states to adopt criteria for priority pollutants that could be impacting uses, and in WA we have made the decision to adopt criteria for PPs that EPA has developed criteria now for (except meHg), regardless of whether they are impacting waters. But if this chemical is not on the PP list, regardless of what IRIS (or the EPA analytical methods group) has decided for their purposes, then I am not sure what to do about recommending or not recommending adoption of the criteria for bis(2-chloroisopropyl) ether. Especially since it is clear that the two chemicals are different, and because of that I cannot imagine why the text above is in IRIS. Maybe an error or again maybe something going on that I just haven't found the explanation for. However, the language in the CWA is pretty clear about the list of toxic pollutants, and EPA has moved that language on through to regulation that contains the list of PPs for CWA purposes, and I just can't find bis(2-chloro-1-methylethyl) ether on the PP list.



This web site has an excellent description of the CWA to CFR transition and links to recent lists: <https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act> .

I will think about this some more and then probably send it on to EPA soon.

If anyone has additional info to add I'd be grateful.

Don-- thanks for your response in a separate e-mail. If EPA means to refer to bis(2-chloro-1-methylethyl) ether then why don't they modify the CFR to add it to the PP list, or at least provide an explanation of it in the new criteria document for that chemical? The language on the CWA and CFRs set out the legal requirements, and the new criteria by EPA are just guidance values. Is EPA aware of the discrepancy?

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

---

**From:** Kolwaite, Douglas S (DEC) [<mailto:douglas.kolwaite@alaska.gov>]  
**Sent:** Tuesday, June 07, 2016 2:34 PM  
**To:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

---

**From:** Kolwaite, Douglas S (DEC)  
**Sent:** Tuesday, June 07, 2016 1:32 PM  
**To:** 'mailto:cnie461@ECY.WA.GOV' <<mailto:cnie461@ECY.WA.GOV>>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

Cheryl,

The ethyl is the priority pollutant. The isopropyl likely doesn't make it into environment without reacting.

The attached discussion from NELAC might be helpful.

Doug

---

**From:** Sonafrank, Nancy B (DEC)  
**Sent:** Tuesday, June 07, 2016 1:23 PM  
**To:** Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>; Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

I haven't run across that discrepancy before. I agree they are two different compounds. I am not sure we can help her on which is the priority pollutant.

---

**From:** Tabor, Brock N (DEC)  
**Sent:** Tuesday, June 07, 2016 8:47 AM  
**To:** Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Doug- can you take a look at this question from Cheryl? Way outside of my field.

Nancy's background might help if you're not familiar either.

Thank you!

---

**From:** Niemi, Cheryl (ECY) [<mailto:cnie461@ECY.WA.GOV>]  
**Sent:** Tuesday, June 07, 2016 8:43 AM  
**To:** [Kenneth.Weaver@dep.state.fl.us](mailto:Kenneth.Weaver@dep.state.fl.us); [Don.Essig@deg.idaho.gov](mailto:Don.Essig@deg.idaho.gov); Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>; Kuhns, Mick <[Mick.Kuhns@maine.gov](mailto:Mick.Kuhns@maine.gov)>  
**Subject:** Help please! HHC question on which chem is the priority pollutant

Hi all.

I have found a puzzle and hoping one of you might have seen this HHC oddity and might have resolved in already. Please see the information below and, hopefully, tell me you have already figured out the answer – or – maybe I am just not reading the circumstances correctly?!

If this is real then I need to figure out whether this will affect final rule language in our state HHC rule, and also figure out what it might mean for EPA's proposed rule for WA.

Sometimes, when I e-mail, snips they end up in different places on the recipient's e-mail. If it looks like things are out of place let me know and I will copy into a Word file and resend.

Thank you!

Cheryl

---

**Below is info that describes the oddity I have come upon:**

Two different compounds are at issue here. Same molecular weight and same elemental make-up but chemical structure is different. Please note which carbon the Cl is attached to in the two pictures below:

Here is NIST page for Bis(2-chloroisopropyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> NIST Bis(2-chloroisopropyl) ether

File Edit View Favorites Tools Help

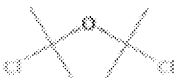
<http://resources.regulation...> <http://resources.regulation...> Vault - Search Retention Schedule Access WA Google

**NIST**  
National Institute of  
Standards and Technology

**MATERIAL  
MEASUREMENT  
LABORATORY**

Star

## Bis(2-chloroisopropyl) ether

- Formula:  $C_6H_{12}Cl_2O$
- Molecular weight: 171.065
- IUPAC Standard InChI:
  - InChI=1S/C6H12Cl2O/c1-5(2,7)9-6(3,4)8/h1-4H3
  - Download the identifier in a file.
- IUPAC Standard InChIKey: BULHJTXR2FEUDQ-UHFFFAOYSA-N
- CAS Registry Number: 39638-32-9
- Chemical structure:
 

This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- Other names: Propane, 2,2'-oxybis[2-chloro-; Propane, 2,2'-oxybis\*2-chloro-; 2,2'-oxybis[2-chloropropane]
- Permanent link for this species. Use this link for bookmarking this species for future reference.
- Information on this page:
  - Notes / Error Report
- Other data available:
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- Options:
  - Switch to calorie-based units

InChI TRUST  
CERTIFIED  
2011

Here is NIST page for Bis(2-chloro-1-methylethyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> NIST Bis(2-chloro-1-methylethyl) ether

File Edit View Favorites Tools Help

<http://resources.regulation...> <http://resources.regulation...> Vault - Search Retention Schedule Access WA Google

**NIST**  
National Institute of  
Standards and Technology


**MATERIAL  
MEASUREMENT  
LABORATORY**

Standard Reference  
Data Program

Data  
Gateway

Chemistry  
Webbook

## Bis(2-chloro-1-methylethyl) ether

- Formula:  $C_8H_{16}Cl_2O$
- Molecular weight: 171.065
- IUPAC Standard InChI:
  - InChI=1S/C8H16Cl2O/c1-5(3-7)9-6(2)4-8/h3-4H3, 1-2H2
  - Download the identifier in a file.
- IUPAC Standard InChIKey: QPFCCTYNLQORT-UHFFFAOYSA-N
- CAS Registry Number: 108-60-1
- Chemical structure:
 

This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- Other names: Propane, 2,2'-oxybis[1-chloro-; Ether, bis(2-chloro-1-methylethyl); 3,3'-Dichlorodisopropyl ether; DCIP; DCBP (Nematocide); 2,2'-Dichlorodisopropyl ether; (2-Chloro-1-methylethyl) ether; Bis(β-chloroisopropyl) ether; Dichlorodisopropyl ether; Dichloroisopropyl ether; NC1-C50044; 2,2'-Dichloroisopropyl ether; Bis(1-chloro-2-propyl) ether; NSC 2849
- Permanent link for this species. Use this link for bookmarking this species for future reference.
- Information on this page:
  - Notes / Error Report
- Other data available:
  - Phase change data
  - Henry's Law data
  - IR Spectrum
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- Options:
  - Switch to calorie-based units

InChI TRUST  
CERTIFIED  
2011

Here is EPA's Priority Pollutant (PP) List as of 2014: <https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf>.

The PP on this list is:

42. Bis(2-chloroisopropyl) ether

Here is the 2014 CFR with the PP list: <https://www.gpo.gov/fdsys/pkg/CFR-2014-title40-vol29/pdf/CFR-2014-title40-vol29-part423-appA.pdf>

The PP on this list is:

042 Bis(2-chloroisopropyl) ether

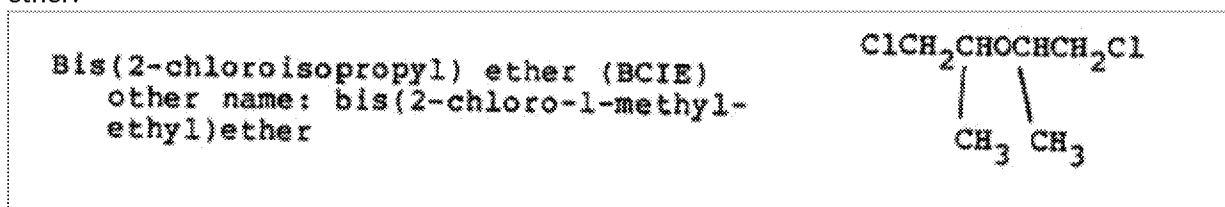
<Note: The CAS #'s are not indicated on the PP lists.>

Some EPA history:

Date/publication	CAS	Chemical	Notes
1980 NRWQC <i>Ambient Water Quality Criteria for Chloroalkyl Ethers</i> EPA 440/5-80-030 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF</a>	Not indicated	Bis(2-chloroisopropyl)ether	Page 10 of 11 the bis(2-chloroisopropyl) ether is a chemical.
1989 EPA IRIS, see page 6 <a href="https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf">https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	On page 6 of 11 represents bis(2-chloro-1-methylethyl) ether is a chemical. ----- ----- ----- I can't find the IRIS summary for 108-60-1. 396
1992 NTR (chem #67)	108-60-1	Bis(2-chloroisopropyl)ether	
2002 matrix EPA-822-R-02-012, page 9 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	On page 9 of 11 table 1 "Bis(2-chloroisopropyl) ether"

			60-396
2002 NRWQC EPA-822-R-02-047, page 16 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	
2015 NRWQC <a href="https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212">https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	EPA ind
EPA's 2015 proposed regulation for WA <a href="https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf">https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	The is: * B Me wa as l Chl Eth

The structure below, from the 1980 criteria document, corresponds to the structure of bis(2-chloro-1-methylethyl) ether:



I think that the actual PP is bis(2-chloroisopropyl)ether (based on the CFR language – which does not contain CAS #'s) and that the correct CAS# is 39638-32-9. If this is so, what is the correct toxicity value for this compound? The two chemicals are indicated to be synonyms in IRIS, but I think this is incorrect. The placement of the chlorines is different, and the toxicity might also be different. I also checked this with a chemist here just to make sure I was thinking straight. He compared the structure of the two compounds and he agrees they are different.

So here is what I think the criteria status might be:

	EPA's new 2015 criteria: Bis(2-chloro-1-methylethyl)ether CAS 108-60-1	Older EPA criteria (with corrected CAS #): Bis(2-chloroisopropyl)ether CAS 39638-32-9
Priority pollutant?	No	Yes
New 2015 recommended EPA criteria?	Yes	No

Is there something here that I am not seeing that makes this a straightforward solution or is it as odd as I am perceiving it to be?

**Thanks for looking at this!**

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Note: This e-mail may be subject to public disclosure.

# NELAC Institute

## **TNI PT Program Executive Committee Meeting Summary**

**October 17, 2013**

### **1. Roll call and approval of minutes:**

Vice-Chair, Eric Smith, called the TNI PT Program Executive Committee (PTP EC) meeting to order on October 17, 2013, at 1:05 PM EST. Attendance is recorded in Attachment A – there were 8 Executive Committee members present. Associate members Present: None.

The meeting minutes from September 26, 2013 were reviewed. Joe motioned to approve the minutes as written. Nicole seconded the motion and it was unanimously approved.

### **2. Committee Membership**

Stacie and Ilona contacted the NELAP AC and Jerry for AB candidates for the committee. Nomination forms will be shared at the next meeting.

Matt Sica submitted his nomination form. We need to review the definitions of our Stakeholder Groups and determine whether he would be an AB or Other (PTPA).

### **3. Posting of Cryptosporidium Table**

Stacie sent out an email this week to find out how to post this table. Ilona will ask Stacie to provide an update to the committee by e-mail.

### **4. Solids and Chemical Waste FoPT Table**

Andy and Joe attended their first Chemistry FoPT meeting. Andy commented on the format of the meeting and hoped that the group might consider meeting 2 hours instead of 1 ½ hours to expedite the process. The group will likely finish reviewing limits for the data they currently have next week. The following meeting will be planned as new data comes in for review.

### **5. NPW Table Revised and Posted**

The table was posted on October 3, 2013. AB's have commented that they have already received revised reports.

#### 6. DW Table with Footnote 15

The NELAP AC received the table update, but the vote has been postponed pending outcome of nomenclature for Cyanide. Ilona will ask Stacie to provide some information on this via e-mail.

#### 7. SOP Updates

Stacie was able to reach Stacey Fry and she will be able to help with the SOP on Limit Updates. A meeting will be scheduled to accommodate a number of busy schedules.

#### 9. Micro Subcommittee

The subcommittee has not met since San Antonio, but they have a meeting scheduled for Monday 10/21/13. Several members of the committee work for EPA, so the government shutdown caused some meeting delays. Susan is gathering data from PT providers for the made-to values with the quantitative PTs and she has received 3 out of 4 provider responses.

#### 10. FoPT Table Format Subcommittee

Jennifer will be meeting with Stacie next week to finalize the membership and plan the first meeting.

Jennifer was at a meeting earlier this month and issues similar to what this committee will be working on were being raised.

#### 11. PT Program Evaluation and Database:

Eric will be contacting this group before the end of the month and will plan to meet early November.

#### 12. New Business

- Andy mentioned an issue that was brought up in the ELAB meeting in San Antonio regarding a misnamed analyte. Nicole and Susan provided the following additional information:

Addition — Susan:



*I searched the IRIS database and found the link for the compound in question. It looks like the IRIS name is Bis(2-chloro-1-methylethyl)ether CAS# 108-60-1 and 2,2'-oxybis(1-chloropropane) is listed as a synonym. If you scroll down to the bottom, you will see the history where EPA changed this name in 2007.*

<http://www.epa.gov/iris/subst/0407.htm>

*The bis(2-chloroisopropyl)ether has a different CAS # 39638-32-9 and has the synonym 2,2'-oxybis(2-chloropropane)*

<http://www.epa.gov/enviro/html/emci/chemref/39638329.html>

Addition – Nicole:

*From the San Antonio meeting:*

*Incorrect name: bis(2-chloroisopropyl)ether; CAS# 39638-32-9*

*Correct name: 2,2'-oxybis(1-chloropropane); CAS# 108-60-1*

*← doesn't  
hand sound  
long*

This will be placed on the November agenda for discussion. Is there something the PTP EC needs to do?

- Ilona reminded the group the program charter needs to be updated for 2014. She will mail the current charter out with the meeting minutes. The committee will also need to prepare a Program Report. (Note: Ilona spoke with Jerry and this report will be a presentation at the start of the Louisville, KY meeting. In the future, this may become a written report.)

### 13. Action Items

- See Attachment B.

### 14. Next Meeting

The next meeting will be confirmed by e-mail – November 21, 2013 at 1pm EST.

Action Items are included in Attachment B and Attachment C includes a listing of reminders.

The meeting was adjourned at 1:45pm EST. Jennifer motion Joe second.  
Unanimously approved.

Message

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**From:** Gildersleeve, Melissa (ECY) [MGIL461@ECY.WA.GOV]  
**Sent:** 2/22/2017 5:51:22 PM  
**To:** Szelag, Matthew [Szelag.Matthew@epa.gov]  
**CC:** Chung, Angela [Chung.Angela@epa.gov]  
**Subject:** RE: WA toxic criteria petition  
**Attachments:** 2017-02-15 WTR Petition for Rulemaking FINAL.PDF

fyi

---

**From:** Szelag, Matthew [mailto:Szelag.Matthew@epa.gov]  
**Sent:** Tuesday, February 21, 2017 5:09 PM  
**To:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Hi Melissa,

Thanks, same here. We've seen the press release but haven't been able to track down the actual petition yet. I'll share it with you when we receive it.

---

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

---

**From:** Gildersleeve, Melissa (ECY) [mailto:MGIL461@ECY.WA.GOV]  
**Sent:** Tuesday, February 21, 2017 4:02 PM  
**To:** Szelag, Matthew <Szelag.Matthew@epa.gov>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Thanks-- hey did you get an actual copy of the AWB petition? We saw the press release but have not seen the actual petition they sent you---Attaching press release in case it did not make it to AK--

FOR IMMEDIATE RELEASE: February 21, 2017

## **EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

***Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable***

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.

"We are all committed to clean water," said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today's action. "Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders' input. The existing EPA rule fails on all these grounds."

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

"From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable," McCabe said. "We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance."

"We were extremely disappointed when EPA's rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state's own rule offers a more realistic and feasible approach to water quality."

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. "The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone's efforts to improve environmental and health outcomes for Washington residents," she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA's new standards. This could put facility operations in jeopardy and dampen employers' ability to create new jobs, as well as to retain existing ones. "This is an issue that touches every person in every community in Washington state," said Kris Johnson, President and CEO of the Association of Washington Business. "In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them."

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

"Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members," said Washington Farm Bureau CEO John Stuhlmiller. "But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology's challenging but achievable standards will deliver something that can work for the state."

"We look forward to working with the state Department of Ecology to replace the EPA's unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state," Stuhlmiller concluded.

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**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]

**Sent:** Tuesday, February 21, 2017 4:21 PM

**To:** Gildersleeve, Melissa (ECY) <[MGIL461@ECY.WA.GOV](mailto:MGIL461@ECY.WA.GOV)>; Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>; Brown, Chad (ECY) <[CHBR461@ECY.WA.GOV](mailto:CHBR461@ECY.WA.GOV)>

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**Subject:** WA toxic criteria petition

FYI – We received this today from NWEA.

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# PETITION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Petition for Reconsideration of EPA's Partial Disapproval of Washington's Human Health Water Quality Criteria and Implementation Tools submitted by the State of Washington on August 1, 2016, and Repeal of the Final Rule Revision of Certain Federal Water Quality Standards Applicable to Washington, 81 Fed. Reg. 85,417 (Nov. 28, 2016)

Submitted February 21, 2017 to the Administrator and Acting Assistant Administrator of the Office of Water, U.S. Environmental Protection Agency

Northwest Pulp & Paper Association, American Forest and Paper Association, Association of Washington Business, Greater Spokane Incorporated, Treated Wood Council, Western Wood Preservers Institute, Utility Water Act Group and Washington Farm Bureau submit this petition to the Administrator of the U.S. Environmental Protection Agency ("EPA") under 5 U.S.C. § 553(e) for the following actions: reconsideration and approval of the State of Washington Human Health Water Quality Criteria and Implementation Tools submitted to the EPA on August 1, 2016, and either repeal or withdrawal of the Revisions of Certain Federal Water Quality Standards Applicable to Washington published at 81 Fed. Reg. 85,417-85,437 (Nov. 28, 2016) ("EPA Final Rule").

## I. SUMMARY

On November 15, 2016, EPA wrongfully disapproved 143 human health criteria submitted by the State of Washington to EPA on August 1, 2016. EPA is required under section 303(c)(3) of the Clean Water Act ("CWA"), 33 U.S.C. § 1313(c)(3), to approve state water quality standards ("WQS") if they meet the requirements of the CWA. EPA regulations specify that state standards for toxics must be protective of beneficial uses, 40 C.F.R. § 131.11(a)(2), and derived using EPA guidance or other scientifically defensible methods. 40 C.F.R. § 131.11(b). In each instance the Washington state-submitted standards are consistent with EPA guidance and the best available science, and therefore comply with the CWA. In disapproving those standards, EPA improperly usurped the primary role of the state to make risk management decisions for human health water quality criteria as well as EPA's own long-standing guidance.

EPA has imposed on the people of the state of Washington arbitrary and capricious human health water quality criteria that will likely be devastating to our local communities and businesses. EPA has sought to advanced its own agenda with no basis in and in disregard of the Clean Water Act, EPA's own regulations and guidance, and long established understanding of science and public health.

In pursuit of its political agenda EPA ignored substantial and overwhelming evidence that its final human health criteria afford no benefit to public health over the Washington-submitted standards, while imposing potentially billions of dollars in additional regulatory and compliance expenses. We respectfully request that EPA reconsider the human health water quality criteria adopted by the State of Washington and either repeal or withdraw the EPA Final Rule. As

discussed below, while Petitioners believe that EPA pushed the State of Washington to adopt criteria that are far more stringent than what is required under the CWA, EPA should now respect the state's prerogative under the CWA to make risk management decisions in deriving human health water quality criteria.

## **II. RECONSIDERATION AND APPROVAL OF WASHINGTON HUMAN HEALTH WATER QUALITY CRITERIA**

### **A. Introduction**

The Washington Department of Ecology ("Ecology") submitted the State of Washington Human Health Water Quality Criteria and Implementation Tools to EPA on August 1, 2016. The new and revised WQS were adopted by Ecology on August 1, 2016, and included for the first-time adoption of human health criteria into Washington's WQS. The Ecology submission also included new and revised language on implementation tools: variances, compliance schedules, intake credits, and combined sewer overflow ("CSO") treatment plants. These new and revised criteria and provisions are located in the Water Quality Standards for Surface Waters of the State of Washington (Chapter 173-201A WAC):

Human Health Criteria and Other Narrative Revisions (WAC 173-201A-240)

Variances (WAC 173-201A-420)

Intake Credits (WAC 173-201A-460)

Compliance Schedules (WAC 173-201A-510(4))

Implementation Clarification for Combined Sewer Overflows (CSO) Treatment Plants (WAC 173-201A-510(6))

EPA initially established Washington's human health criteria for toxic pollutants in the 1992 National Toxics Rule ("NTR").<sup>1</sup> Ecology's August 1, 2016 submittal contains 192 new human health criteria for 97 priority pollutants that are applicable to all surface waters of the state. EPA should take action under CWA § 303(c), 33 U.S.C. § 1313(c), to approve the human health criteria submitted by Washington because the criteria are based on sound scientific rationale and protective of applicable designated uses in Washington.

### **B. EPA is Required to Approve State Water Quality Standards that are Consistent with EPA Guidance and Scientifically Defensible Methods**

Congress established a federal-state partnership for implementing the CWA. *PUD No. 1 of Jefferson County v. Washington Dept. of Ecology*, 511 U.S. 700, 703-04, 114 S.Ct. 1900 (1994); *City of Abilene v. U.S. E.P.A.*, 325 F.3d 657, 659 (5<sup>th</sup> Cir. 2003) (quoting *Arkansas v. Oklahoma*, 503 U.S. 91, 101, 112 S.Ct. 1046 (1992)). The U.S. Supreme Court has described the CWA as "a program of cooperative federalism." *New York v. U.S.*, 505 U.S. 144, 167, 112 S.Ct.

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<sup>1</sup> 57 Fed. Reg. 60,848 (Dec. 22, 1992)(00768-847); 40 CFR Part 131.36 (as amended in 1999 for PCBs).

2408 (1992). States are principally responsible for implementing much of the statute. 33 U.S.C. § 1251(b) (“It is the policy of Congress to recognize, preserve, and protect the primary responsibilities and right of States to prevent, reduce, and eliminate pollution.”).

The CWA accordingly assigns to the states the primary authority for adopting water quality standards. 33 U.S.C. § 1313(a), (c). State water quality standards submitted to EPA must protect all designated beneficial uses, be based on sound scientific rationale and contain sufficient parameters or constituents to protect the designated uses. 40 C.F.R. § 131.11(a). When establishing criteria, states are encouraged to base numeric values on guidance adopted by EPA pursuant to CWA § 304(a) (“304(a) Guidance”); 304(a) Guidance modified to reflect site-specific conditions; or other scientifically defensible methods. 40 C.F.R. § 131.11(b). The standards must include the six elements set out in 40 C.F.R. § 131.6, including use designations consistent with the CWA, the methods used and analyses conducted to support the WQS, and water quality criteria sufficient to protect the designated uses.<sup>2</sup>

Once adopted by a state, EPA’s role is to review the standards for consistency with the CWA, and either approve or disapprove the standards. 33 U.S.C. § 1313(c)(2)(A); 40 C.F.R. § 131.5(a). EPA’s review is not open-ended or discretionary. Rather, it reviews the standards with reference to five different factors set out in 40 C.F.R. § 131.5(a). If EPA determines that the standards are consistent with these factors, EPA must, within 60 days of the date of submission, approve the standards. 33 U.S.C. § 1313(c)(3); 40 C.F.R. § 131.5(b). If EPA determines that the state-submitted standards are not consistent with these five factors, then EPA has 90 days in which to notify the state and specify the changes necessary to meet the CWA’s requirements. *Id.* If the state fails to adopt the changes within 90 days of notification by the EPA, then EPA must promulgate a water quality standard for the state. 33 U.S.C. §§ 1313(c)(3), (c)(4).

### **C. The State of Washington Used Appropriate Inputs to Derive Its Human Health Water Quality Criteria**

EPA’s 2000 Human Health Methodology<sup>3</sup> (“2000 Human Health Methodology”) provides states with CWA 304(a) Guidance for deriving human health criteria for toxic pollutants. For each input used in the criteria calculation, EPA provides a national recommended value and guidance on specific adjustments that may be necessary to reflect local conditions and protect the most highly exposed populations. As part of evaluating whether Washington’s criteria protect the applicable designated uses, EPA should review Washington’s selected input values by evaluating the scientific rationale for each input and whether there was Washington-specific information relative to each value that should be considered in the review.

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<sup>2</sup> 40 C.F.R. § 131.20(c) further delineates the information, analyses, methodologies and policies that states must submit to EPA along with the water quality standards.

<sup>3</sup> EPA. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*. U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004 (2000)(00074-0258).

**i. Inputs to Washington’s Human Health Criteria**

**1. Cancer Risk Level**

Ecology derived human health criteria for carcinogens using a chemical-specific cancer risk level of one-in-one million ( $10^{-6}$ ) as specified in WAC 173-201A-240, except for the chemical-specific risk level for PCBs of  $2.3 \times 10^{-5}$ . Ecology’s selection of a  $10^{-6}$  cancer risk level and separate chemical specific risk level for PCBs is consistent with the EPA’s 2000 Human Health Methodology.<sup>4</sup>

**2. Cancer Slope and Reference Dose**

Ecology used the Cancer Slope Factors (“CFSs”) and Reference Dose (“RfDs”) that correspond to EPA’s most recent 304(a) recommended criteria with two exceptions. For arsenic and 2,3,7,8-TCDD (“dioxin”), the state has used alternative approaches based on scientifically defensible methods that are consistent with the CWA and EPA guidance.

**3. Exposure Assumptions**

**a. Fish Consumption Rate**

Ecology used an FCR of 175 g/day to derive the Washington human health criteria. Ecology describes this decision as a Washington-specific risk management choice to use a value that: (1) is representative of state-specific information; and (2) was determined through a process that included consideration of the EPA guidance and precedent, and input from multiple groups of stakeholders.<sup>5</sup> Specifically, in selecting a FCR of 175 g/day, Ecology stated: “Since Washington has a strong tradition of fish and shellfish harvest and consumption from local waters, and within-state survey information indicates that different groups of people harvest fish both recreationally and for subsistence (Ecology, 2013), *Ecology has made the risk management decision to base the fish consumption rate used in the HHC equation on “highly exposed populations,”* which include, among other groups, the following: tribes, Asian Pacific Islanders (API), recreational and subsistence fishers, immigrant populations.”<sup>6</sup>

EPA’s 2000 Human Health Methodology recognizes the variability of FCRs among population groups and by geographic region. In employing the 2000 Human Health Methodology to derive criteria, EPA urges states and tribes to use a fish intake level derived from local or regional data instead of the national default recommendation in order to ensure the fish intake level chosen is protective of highly exposed subpopulations. The 2000 Human Health Methodology includes a four-preference hierarchy concerning the use of fish consumption rate

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<sup>4</sup> *Id.*.

<sup>5</sup> Ecology, *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*, at 27 (Aug. 2016); Ecology, *Fish Consumption Rates Technical Support Document* (Jan. 2013)(05398-5591).

<sup>6</sup> See n.5, Ecology Overview, at 28.



data: (1) use of local data; (2) use of data reflecting similar geography/population groups; (3) use of data from national surveys; and (4) use of the EPA's default intake rate.

EPA should defer to the FCR and basis for the value articulated by Ecology. Ecology's approach is consistent with EPA's recommendation to use scientifically sound regional and local fish consumption data. EPA should acknowledge that while some tribes within the state have reportedly viewed 175 g/day as a compromise minimum value for current criteria-setting purposes, only so long as it is coupled with a cancer risk level of  $10^{-6}$  that there is no treaty right or scientific basis for establishing  $10^{-6}$  risk level as a minimum risk level necessary to protect beneficial use of state waters for tribal members.

EPA should accordingly approve of Washington's decision to derive the human health criteria using a FCR of 175 g/day and at the chemical specific cancer risk levels applied by the state, including the chemical specific risk level used for derivation of the state PCB criteria.

#### ***b. Drinking Water Intake***

Ecology properly derived human health criteria using a drinking water intake rate of 2.4 L/day. In the absence of reliable local or regional data, EPA recommends that states refer to the most current available national data on drinking water intake rates. EPA should approve Ecology's use of a drinking water intake value of 2.4 L/day to derive human health criteria, consistent with EPA's 2015 updated 304(a) recommendations.

#### ***c. Body Weight***

Ecology properly derived human health criteria using a body weight assumption of 80 kg based on tribal survey data relevant to Washington and EPA's 2011 Exposure Factors Handbook.<sup>7</sup> EPA should approve Ecology's selection of a body weight of 80 kg to derive human health criteria.

#### ***d. Bioconcentration Factors/Bioaccumulation Factors***

Ecology properly derived human health criteria using Bioconcentration Factors ("BCFs"), including the use of EPA's 1980 guidance to calculate BCFs for 1,1,1-Trichloroethane and 3-Methyl-4-chlorophenol. Ecology concluded that, 1) BCFs are more closely related to water which is regulated under the CWA, 2) BCFs do not include as many inputs and predictions based on national datasets, 3) BCFs have fewer inputs and less uncertainty, and 4) BCFs are acceptable under the CWA for criteria development.<sup>8</sup> Ecology demonstrated that its selection of BCFs to derive human health criteria is scientifically defensible and protective of the applicable designated uses.

To account for bioaccumulation, the EPA 2000 Human Health Methodology recommends use of bioaccumulation factors ("BAFs") that account for uptake of a contaminant

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<sup>7</sup> EPA. *EPA Exposure Factors Handbook*. 2011 ed. (EPA 600/R-090/052F). <http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252>.

<sup>8</sup> See n.5, Ecology Overview, at 56.

from all sources by fish and shellfish, rather than BCFs that only account for uptake from the water column. EPA's 2015 304(a) recommendations replace BCFs with BAFs, where data are available. EPA's national recommended BAFs are not, however, based on publicly available data or translatable to Washington waters without extensive additional information. EPA published supplemental information on development of the national recommended BAFs in January 2016 that is still lacking in sufficient technical and scientific detail for its application to developing human health criteria in Washington.<sup>9</sup>

Ecology explained in its August 2016 submittal to EPA that it made an appropriate risk management decision to "use a BCF-based approach (as per EPA, 1980, and as used in the NTR) for criteria calculation for the following reasons:

- BCFs are more closely related to the specific environmental media (water) that is regulated under the Clean Water Act.
- BCFs do not include as many inputs and predictions that are based on national water, sediment, and biota datasets, while BAFs are dependent on these inputs. The national datasets supporting the BAFs are not necessarily reflective of Washington waters.
- The BCF-based approach includes far fewer input values. Because of this, the BCFs have far fewer sources of directly introduced uncertainty.
- BCFs are acceptable science for purposes of Clean Water Act criteria development. EPA currently uses a combination of BAFs and BCFs to calculate its NRWQC, and used a combination of BAFs and BCFs for its 2015 proposed new regulation for Washington. Therefore, both BAFs and BCFs could represent acceptable science choices for Clean Water Act purposes."<sup>10</sup>

EPA should approve the use of BCFs by Washington to derive the state human health water quality criteria as a scientifically defensible risk management decision for a state developing water quality standards under the CWA.

#### **4. Relative Source Contribution**

Ecology appropriately derived human health criteria using a relative source contribution ("RSC") value of 1.0. Ecology stated that this is an appropriate risk management decision due to the limited ability of the CWA to control exposure to pollutant sources outside of its jurisdiction.

EPA recommends an RSC ceiling of 0.8 to ensure protection of individuals whose exposure could be greater than indicated by current data and to account for unknown sources of exposure. In the EPA 2015 updated 304(a) recommendations EPA applied a pollutant-specific RSC value for all non-carcinogens and nonlinear carcinogens.<sup>27</sup> The EPA human health criteria FAQs clarify that, where a state FCR includes freshwater, estuarine, and all marine fish

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<sup>9</sup> USEPA. January 2016. *Development of National Bioaccumulation Factors: Supplemental Information for EPA's 2015 Human Health Criteria Update*. Office of Water, Washington, D.C. EPA 822-R-16-001.

<sup>10</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025 at 56. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>.

consumption, states can adjust the RSC upward to reflect that marine exposures are already accounted for in the FCR.<sup>30</sup> In Washington, Ecology used an FCR of 175 g/day that includes all fish and shellfish, including all salmon, restaurant, locally caught, imported, and from other sources. Because the selected FCR includes all marine species, it is appropriate to use an RSC of 1.0 as the FCR already accounts for other potential exposure sources consistent with the logic and procedures used in establishing the national 304(a) criteria recommendations.

Ecology has adequately justified departing from the EPA guidance (to use an RSC between 0.2 and 0.8) when using an RSC value of 1.0 to derive human health criteria for all non-carcinogens and nonlinear carcinogens, and it has adequately explained why it is appropriate to disregard all other routes of exposure, including air, soil, other marine fish and shellfish, non-fish food, etc. Ecology demonstrated how its selection of an RSC value of 1.0 to derive human health criteria is scientifically defensible and protective of the applicable designated uses.

#### **D. EPA Should Approve All of the Washington Human Health Water Quality Criteria**

In accordance with 40 CFR 131.11(a), EPA must ensure that new or revised criteria are based on sound scientific rationale and contain sufficient parameters or constituents to protect designated uses. EPA should find that Ecology adopted human health criteria protective of designated uses in all cases and approve the Washington criteria as protective of Washington's designated uses, consistent with CWA requirements and EPA's implementing regulations at 40 CFR 131.11.

##### **i. EPA Approval of 192 New Human Health Criteria**

#### **The EPA Action**

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR part 131, EPA should approve the 192 "water + organism" and "organism only" human health criteria identified in Table 1.

#### **The EPA Rationale**

EPA should evaluate Washington's criteria values against its 304(a) Guidance and the scientifically defensible methods cited in Ecology's key decision document. EPA should determine that the state human health water quality criteria are protective of Washington's designated uses.

**Table 1. Approved Human Health Criteria**

			Washington's Criteria	
			Water & Organisms (µg/L)	Organisms Only (µg/L)
1	1,1,1-Trichloroethane	71556	47000	160000
2	1,1,2,2-Tetrachloroethane	79345	0.12	0.46

			Washington's Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
3	1,1,2-Trichloroethane	79005	0.44	1.8
4	1,1-Dichloroethylene	75354	1200	4100
5	1,2,4-Trichlorobenzene	120821	0.12	0.14
6	1,2-Dichlorobenzene	95501	2000	2500
7	1,2-Dichloroethane	107062	9.3	120
8	1,2-Dichloropropane	78875	0.71	3.1
9	1,2-Diphenylhydrazine	122667	0.015	0.023
10	1,2-Trans-Dichloroethylene	156605	600	5800
11	1,3-Dichlorobenzene	541731	13	16
12	1,3-Dichloropropene	542756	0.24	2.0
13	1,4-Dichlorobenzene	106467	460	580
14	2,3,7,8-TCDD (Dioxin)	1746016	0.000000013	0.000000014
15	2,4,6-Trichlorophenol	88062	0.25	0.28
16	2,4-Dichlorophenol	120832	25	34
17	2,4-Dimethylphenol	105679	85	97
18	2,4-Dinitrophenol	51285	60	610
19	2,4-Dinitrotoluene	121142	0.039	0.18
20	2-Chloronaphthalene	91587	170	180
21	2-Chlorophenol	95578	15	17
22	2-Methyl-4,6-Dinitrophenol	534521	7.1	25
23	3,3'-Dichlorobenzidine	91941	0.0031	0.0033
24	3-Methyl-4-Chlorophenol	59507	36	36
25	4,4'-DDD	72548	0.000036	0.000036
26	4,4'-DDE	72559	0.000051	0.000051
27	4,4'-DDT	50293	0.000025	0.000025
28	Acenaphthene	83329	110	110
29	Acrolein	107028	1.0	1.1
30	Acrylonitrile	107131	0.019	0.028
31	Aldrin	309002	0.0000057	0.0000058
32	alpha-BHC	319846	0.0005	0.00056
33	alpha-Endosulfan	959988	9.7	10
34	Anthracene	120127	3100	4600
35	Antimony	7440360	12	180
36	Arsenic	7440382	10	10

			Washington's Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
37	Asbestos	1332214	7,000,000 (fibers/L)	
38	Benzene	71432	0.44	1.6
39	Benzidine	92875	0.00002	0.000023
40	Benzo(a) Anthracene	56553	0.014	0.021
41	Benzo(a) Pyrene	50328	0.0014	0.0021
42	Benzo(b) Fluoranthene	205992	0.014	0.021
43	Benzo(k) Fluoranthene	207089	0.014	0.21
44	beta-BHC	319857	0.0018	0.002
45	beta-Endosulfan	33213659	9.7	10
46	Bis(2-Chloroethyl) Ether	111444	0.02	0.06
47	*Bis(2-Chloro-1-Methylethyl) Ether	108601	Not submitted	Not submitted
48	Bis(2-Ethylhexyl) Phthalate	117817	0.23	0.25
49	Bromoform	75252	5.8	27
50	Butylbenzyl Phthalate	85687	0.56	0.58
51	Carbon Tetrachloride	56235	0.2	0.35
52	Chlordane	57749	0.000093	0.000093
53	Chlorobenzene	108907	380	890
54	Chlorodibromomethane	124481	0.65	3
55	Chloroform	67663	260	1200
56	Chrysene	218019	1.4	2.1
57	Copper	7440508	1300	
58	Cyanide	57125	19	270
59	Dibenzo(a,h) Anthracene	53703	0.0014	0.0021
60	Dichlorobromomethane	75274	0.77	3.6
61	Dieldrin	60571	0.0000061	0.0000061
62	Diethyl Phthalate	84662	4200	5000
63	Dimethyl Phthalate	131113	92000	130000
64	Di-n-Butyl Phthalate	84742	450	510
65	Endosulfan Sulfate	1031078	9.7	10
66	Endrin	72208	0.034	0.035
67	Endrin Aldehyde	7421934	0.034	0.035
68	Ethylbenzene	100414	200	270
69	Fluoranthene	206440	16	16

			Washington's Criteria	
	Chemical	CAS Number	Water & Organisms (µg/L)	Organisms Only (µg/L)
70	Fluorene	86737	420	610
71	Gamma-BHC; Lindane	58899	15	17
72	Heptachlor	76448	0.0000099	0.00001
73	Heptachlor Epoxide	1024573	0.0000074	0.0000074
74	Hexachlorobenzene	118741	0.000051	0.000052
75	Hexachlorobutadiene	87683	0.69	4.1
76	Hexachlorocyclopentadiene	77474	150	630
77	Hexachloroethane	67721	0.11	0.13
78	Indeno(1,2,3-cd) Pyrene	193395	0.014	0.021
79	Isophorone	78591	27	110
80	Methyl Bromide	74839	520	2400
81	Methylene Chloride	75092	16	250
82	Methylmercury	22967926	Not submitted	Not submitted
83	Nickel	7440020	150	190
84	Nitrobenzene	98953	55	320
85	N-Nitrosodimethylamine	62759	0.00065	0.34
86	N-Nitrosodi-n-Propylamine	621647	0.0044	0.058
87	N-Nitrosodiphenylamine	86306	062	0.69
88	Pentachlorophenol (PCP)	87865	0.046	0.1
89	Phenol	108952	18000	200000
90	Polychlorinated Biphenyls (PCBs)	PCB	0.00017	0.00017
91	Pyrene	129000	310	460
92	Selenium	7782492	120	480
93	Tetrachloroethylene	127184	4.9	7.1
94	Thallium	7440280	0.24	0.27
95	Toluene	108883	180	410
96	Toxaphene	8001352	0.000032	0.000032
97	Trichloroethylene	79016	0.38	0.86
98	Vinyl Chloride	75014	0.02	0.26
99	Zinc	7440666	2300	2900

## **ii. EPA Approval of Washington Human Health Criteria for PCBs**

Ecology adopted human health criteria for PCBs that are the same as those that were in effect under the NTR (as revised in 1999): 0.00017 µg/L for both the criteria for water & organisms and organisms only. Ecology appropriately considered local and regional data when selecting an FCR of 175 g/day and risk level of  $4 \times 10^{-5}$  for deriving its PCB criteria. This risk level is the same level of risk/hazard used by the Washington Department of Health in developing fish advisories. When Ecology used the  $4 \times 10^{-5}$  cancer risk level along with its other inputs to calculate PCB criteria, the resulting criteria of 0.00029 µg/L were less stringent than the 1999 NTR values. Ecology then made an appropriate risk management decision to adjust the cancer risk level to  $2.3 \times 10^{-5}$  so the criteria adopted by the state would be equivalent to the NTR criteria for PCBs, 0.00017 µg/L.<sup>11</sup>

### **The EPA Action**

Based upon the above evaluation and in accordance with its CWA authority, 33 U.S.C. § 1313(c)(3) and 40 CFR Part 131, EPA should approve Washington's "water + organism" and "organism only" human health criteria for PCBs of 0.00017 µg/L.

### **The EPA Rationale**

EPA should determine that Washington's criteria of 0.00017 µg/L for the protection of human health from exposure to PCBs from the consumption of water and organisms and organisms only are protective of Washington's designated uses and, therefore, comply with CWA § 303(c) and 40 CFR 131.11. Ecology provided adequate supporting information for its chemical specific state risk management decision, which conforms to EPA historic and recent 304(a) Guidance.

Ecology's submittal of human health criteria to EPA includes information regarding both the difficulty in detecting and the ability to treat effluent to remove PCBs. The analytical method required by EPA for compliance purposes (EPA Method 608) does not detect PCBs at the low concentrations in water at which they occur. Because PCBs in the water column are difficult to detect, methods that depend on concentration of PCBs in fish and shellfish tissue are frequently used to assess PCB levels across the state. Aquatic biota accumulate PCBs as part of their exposure to the food web, and the PCBs are often detected in fish and shellfish tissue. The use of fish and shellfish tissue monitoring data are used to support development of Washington Department of Health fish advisories (WDOH, 2014) and Clean Water Act Section 303(d) impaired waters lists (Ecology, 2012). Monitoring information demonstrates that PCBs are widespread in the environment, but have in general been decreasing in concentrations since the 1979 "ban" on use of PCBs was put in place.

PCBs present regulatory challenges for Clean Water Act programs because:

- PCBs were widely used prior to the 1979 "ban".
- PCBs are widespread in the sediments and in biota.

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<sup>11</sup> See n.5, Ecology Overview, at 67.

- PCBs are long-lasting and bind readily to fats. Because of this they continue to cycle in the environment and in the food web. PCBs readily accumulate in organisms.
- PCBs are transported through the atmosphere.
- Because PCBs are transported along many pathways, and come from many sources associated with human habitation and use, they are found widely in environments that range from pristine to highly developed.
- Treatment plants are most often not designed to remove these chemicals. However, treatment plants that enhance solids removal will also remove PCBs.

These PCB characteristics make them particularly difficult to control, and efforts to address PCBs are multimedia, including contaminated site clean-up, regulation of PCBs in products, and reductions of PCBs from airborne sources. Disposal of PCBs requires specifically designed equipment. Ecology has developed a Chemical Action Plan for PCBs to address additional multimedia approaches to control PCBs entering the environment.<sup>12</sup>

EPA additionally has acknowledged unresolved technical issues associated with deriving human health water quality criteria for PCBs.

On June 29, 2015, EPA issued a final update to its CWA 304(a) Guidance for the protection of public health. PCBs were among the chemicals that EPA did not update due to “outstanding technical issues.”<sup>13</sup> The scope of these technical issues is described in statements by EPA justifying its decision not to revise the Toxics Substance Control Act (“TSCA”) PCB regulations. Dennis McLerran, in a letter addressed to the Spokane River Regional Toxics Task Force through the Department of Ecology, wrote:

Revising current regulations to reduce inadvertently generated PCBs presents both policy and scientific challenges. Before proposing more stringent regulations on the inadvertent generation of PCBs in pigments, the EPA would seek to further understand the complexities and contributions of not only pigments, but also other congeners that may be present [in receiving water]....

...The aggregation of PCB congeners may in some instances be problematic for risk assessment because the toxicity of different PCB congeners varies and a fixed water quality concentration for total PCBs may not adequately represent the variable toxicity of the various congeners actually present in a particular water body. While the EPA is not proposing to undertake a comprehensive analysis of the remaining PCB congeners, we are examining the characterization of PCBs in water bodies. As stated above, characterizing all of the PCBs in the EPA recommended water quality criteria for PCBs (i.e., expressed as total PCBs) is one topic we are discussing.<sup>14</sup>

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<sup>12</sup> See n.5, Ecology Overview, at 63.

<sup>13</sup> See n.129. EPA, Human Health Ambient Water Quality Criteria: Draft 2014 Update at 2.

<sup>14</sup> D. McLerran, Letter to A. Borgias (February 24, 2015)(04239-04240).



EPA affirmed as recently as August 3, 2015, that revising PCB regulations “presents both policy and scientific challenges.”<sup>15</sup> This is particularly the case because EPA authorizes ongoing PCB generation and release to the environment under its TSCA rules and through tribal and federal hatchery operations in the State of Washington.

These challenges support the state PCB criteria. A recent study in Washington documented the ubiquitous presence of low PCB levels in manufactured products including paints, used motor oil, road striping, dust suppressants, antifreeze, hydro-seed materials, packaging, toothpaste, hand soap, laundry soap and shampoo.<sup>16</sup>

For many dischargers in Washington, EPA-allowed PCB concentrations are a significant portion of the PCBs in their effluent. For pulp and paper mills using recycled materials their primary source of PCBs is from EPA-allowed concentrations in inks and dyes.<sup>17</sup> The same is true for wastewater treatment plants. In a 2015 report, Spokane County reported that PCB-11, a PCB congener associated with EPA allowed PCB concentrations, “was measured at relatively high concentrations...in both the influent and effluent.”<sup>18</sup> PCB-11 was the “single most abundant congener in the effluent.”<sup>19</sup> The same study evaluated PCB concentrations from three neighborhoods predominantly developed before 1970, from 1970 to 1985 and after 1985. The study found the highest PCB concentrations from the two most recently developed neighborhoods and concluded that there is “little correlation between the year of construction and the source of PCB contamination.”<sup>20</sup>

Ecology made an appropriate risk management decision specific to PCBs given the ubiquitous presence of PCBs in Washington surface waters in effluent and stormwater, including discharges and fish released from federal and tribal fish hatcheries. Implementing the PCB criteria adopted in the EPA Final Rule would create a regulatory quagmire for the state NPDES and TMDL program.

Most of the state of Washington would likely be listed as impaired for failing to meet the EPA PCB criteria. This is illustrated in the following chart, based on water column data in the Ecology Environmental Information (“EIM”) database.<sup>21</sup> This table shows an average of the total PCBs for each monitoring station at the surface and at depth throughout Puget Sound:

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<sup>15</sup> L. Mann, Email to M. Macintyre at 2 (August 3, 2015)(05063-5065).

<sup>16</sup> City of Spokane, PCBs in Municipal Products (Rev.), Table B-1 (July 21, 2015)(06694-6738).

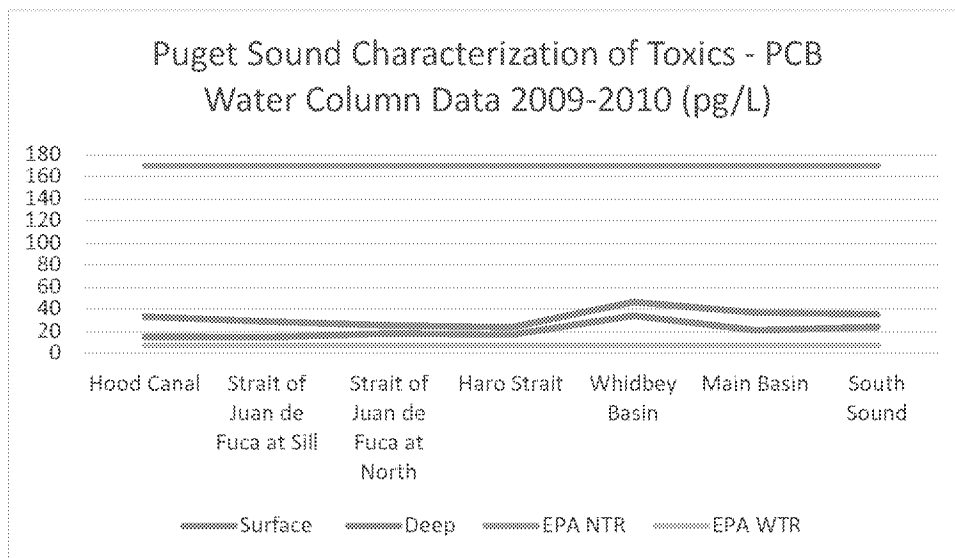
<sup>17</sup> D. Krapas, Slide Show “Dealing with PCBs in the Spokane River” at 3 (October 2, 2012)(06443-6463).

<sup>18</sup> Brown and Caldwell, 2015 Annual Toxics Management Report Spokane County Regional Water Reclamation Facility NPDES Permit WA-0093317 at 2-18 (2015)(04861-4948).

<sup>19</sup> *Id.* at 2-18.

<sup>20</sup> *Id.* at 2-27.

<sup>21</sup> Ecology email (07311) and attached EIM Data for Puget Sound (Dec. 8, 2015)(05987)



Based on this data, all of Puget Sound, Hood Canal and Strait of Juan de Fuca would be subject to listing under the CWA as impaired for failing to meet the EPA Final Rule PCB criteria. Ecology has further documented that wastewater treatment plants in Washington have levels of PCB concentrations that are well above the EPA Final Rule PCB criteria. In fact, every wastewater treatment plant sampled by Ecology, with the exception of two facilities with reporting levels of 600 pg/L, were well above the final EPA criteria.<sup>22</sup>

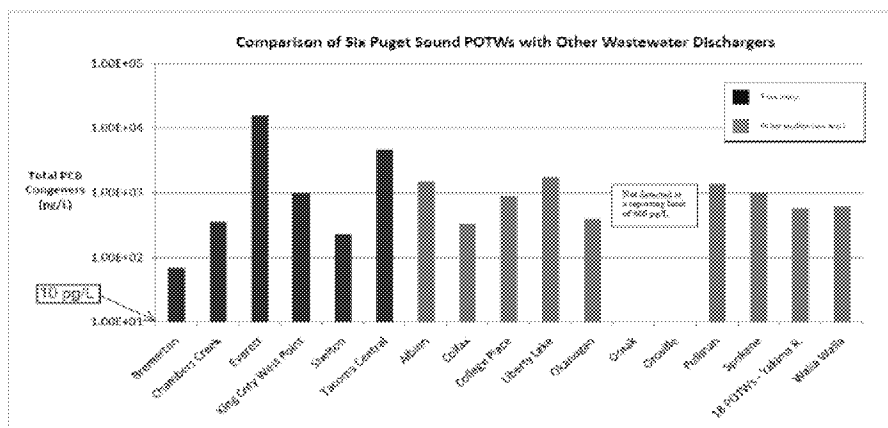


Figure 2. Comparison of Average Total PCB Results among Several POTWs

EPA has previously relied on this effluent data information to perform a narrative reasonable potential analysis for three municipalities on the Spokane River. In the 2012 Fact

<sup>22</sup> Ecology, Control of Toxic Chemicals in Puget Sound Summary Technical Report for Phase 3: Loadings from POTW Discharge of Treated Wastewater, Figure 2 (December 2010)(Publication No. 10-10-057)(05746-5986).

Sheet for the City of Coeur d'Alene wastewater treatment plant NPDES permit EPA made the following statement regarding the data presented in Figure 2:

PCBs have been detected in effluent from POTWs discharging to the Spokane River in the State of Washington (i.e., the City of Spokane and Liberty Lake Sewer and Water District) as well as other POTWs in Washington State operated by the Cities of Medical Lake, Okanogan, College Place, Walla Walla, Pullman, Colfax, Albion, Bremerton, Tacoma, and Everett, and King and Pierce counties. Effluent concentrations of total PCBs at these 14 facilities (a total of 34 samples) ranged from 46.6 to 39,785 pg/L with a median concentration of 810 pg/L.<sup>23</sup>

The Spokane River offers a precedent for how PCBs will be regulated in NPDES permits throughout the state of Washington under the EPA Final Rule PCB criteria. EPA approved water quality standards for the Spokane Tribe of Indians in 2013 that include a PCB criteria of 1.3 pg/L. In litigation regarding the obligation of EPA to develop a PCB TMDL for the Spokane River EPA has represented in federal court that year-round tertiary membrane filtration treatment is an appropriate best management practice for a wastewater treatment plant.<sup>24</sup>

The incremental cost for such treatment including construction costs and operation and maintenance costs range between \$75 and \$160 million for a 5 mgd plant and net present value unit cost of between \$15 and \$32 per gallon per day. Attachment C, at ES-3, Table ES-1. EPA previously identified 406 NPDES permits administered by Ecology including 73 “major” permits in its economic impact analysis for the EPA Final Rule. If EPA were to follow the same approach on Puget Sound that it has on the Spokane River, this would amount to a range of compliance costs from nearly \$6 billion to over \$11 billion for just “major” permits identified by EPA.<sup>25</sup>

It is also apparent that tribal and federal fish hatcheries discharge a significant percentage of the annual PCB loading to Washington waters. EPA authorizes the operation of these hatcheries and the contamination of fish released by these hatcheries under the authority of a general NPDES permit.<sup>26</sup> Ecology has identified hatcheries as a significant source of PCB loading to waters of the state, and has estimated that as much as ten percent of annual PCB loading to Puget Sound is attributable to returning salmon.<sup>27</sup> In 2011, Ecology calculated that returning salmon contribute up to 0.3 kg/yr based on PCB residues per whole-body fish ranging from 7 µg for pink salmon to 336 µg for Chinook salmon.<sup>28</sup>

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<sup>23</sup> EPA, City of Coeur d'Alene Revised Fact Sheet NPDES Permit No. ID0022853 at 17 (2013)(07468-7569).

<sup>24</sup> *Sierra Club v. EPA*, Case No.2:11-cv-017959-BJR Doc. No. 129-1 EPA's Plan for Addressing PCBs in the Spokane River (July 14, 2015)(06320-6350).

<sup>25</sup> \$75 MM x 73 = \$5.5 Billion; \$160 MM x 73 = \$11.7 Billion.

<sup>26</sup> EPA, Preliminary Draft NPDES Permit for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country, Permit No. WAG-130000 (August 2015)(06216-6319).

<sup>27</sup> Ecology, Control of Toxic Chemicals in Puget Sound: Assessment of Selected Toxic Chemicals in Puget Sound 2007-2011 at 93 (2011)(Ecology Pub. 11-03055)(04297-4593).

<sup>28</sup> *Id.*

Ecology has also acknowledged, in addition to the PCB loading from returning salmon, that PCB contaminated hatchery fish play a significant role in CWA Section 303(d) listings for PCBs.<sup>29</sup> Ecology concluded that hatchery fish “may contribute to impairment and, in some cases, may cause the bulk of impairment.”<sup>30</sup> *Id.*, at 30.

The 2006 Ecology report on hatchery fish included an analysis of skin-on fillets of pre-release rainbow trout from 11 hatcheries with PCBs concentrations ranging from <2.3 to 67 ng/g (wet weight) with an average of 13.0 ng/g (wet weight) PCBs.<sup>31</sup> Other researchers have found between 39 and 59 ng/g total PCBs in whole-body juvenile Chinook salmon from six west coast hatcheries.<sup>32</sup> The authors concluded, “contaminated salmon may be a significant source of toxicants in the environment and in the food chain.”<sup>33</sup> A study of British Columbia hatcheries found on average 25.5 and 48.5 ng/g (wet weight) PCBs in Chinook smolts from two hatcheries and 34.9 ng/g (wet weight) in Coho smolts from a third (BC) hatchery.<sup>34</sup> An analysis of pre-release juvenile Chinook from eight hatcheries feeding on the Columbia River found whole body concentrations of PCBs ranging from 6.9 to 61 ng/g (wet weight), corresponding to 22 to 323 ng per fish (individual hatchery-specific average weights from 3.2 to 6.2 g).<sup>35</sup> An analysis of pre-release juvenile Chinook salmon from the Soos Creek hatchery on Puget Sound over a three year period found total PCB concentrations ranging from 10 to 50 ng/g (wet weight), corresponding to 90 to 125 ng PCB per fish (fish weight ranged from 2.5-9.4 g).<sup>36</sup> NOAA Fisheries has also documented the significant PCB concentrations in hatchery fish feed and in hatchery origin fish.<sup>37</sup>

Tribal and federal hatcheries are undoubtedly an increasing source of PCB loading to Washington waters. In 2010, the combined hatchery release in Washington was 229.5 million

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<sup>29</sup> Ecology, Persistent Organic Pollutants in Feed and Rainbow Trout from Selected Trout Hatcheries (April, 2006)(Ecology Pub. No. 06-03-017)(04681-4732).

<sup>30</sup> *Id.* at 30.

<sup>31</sup> *See* n.29.

<sup>32</sup> L. Johnson *et al*, Contaminant Exposure in Outmigrant Juvenile Salmon from Pacific Northwest Estuaries of the United States, 124 ENVIRON. MONIT. ASSESS. 167-194 (2007)(04955-4982).

<sup>33</sup> *Id.*

<sup>34</sup> Kelly *et al*, Persistent Organic Pollutants in Aquafeed and Pacific Salmon Smolts from Hatcheries in British Columbia, Canada, 285 AQUACULTURE 224-233 (2008).

<sup>35</sup> Johnson *et al*, Contaminant Concentrations in Juvenile Fall Chinook Salmon from Columbia River Hatcheries, 72 N. AMERIC. J. AQUACULTURE 73-92 (2010).

<sup>36</sup> Meador *et al.*, Bioaccumulation of Polychlorinated Biphenyls in Juvenile Chinook Salmon (*Oncorhynchus Tshawytscha*) Outmigrating through a Contaminated Urban Estuary: Dynamics and Application, 19 ECOTOXICOLOGY 141-152 (2010).

<sup>37</sup> NOAA Fisheries, Draft Environmental Impact Statement on Two Joint Tribal Resource Management Plans for Puget Sound Salmon and Steelhead Hatchery Programs, Appendix K (2014)(04257-4273).

fish including 117.4 million Chinook salmon.<sup>38</sup> In 2015, the Northwest Indian Fisheries Commission reported that tribal hatcheries alone released 40 million salmon and steelhead.<sup>39</sup>

The Washington PCB criteria reflect a reasonable state risk management decision that is consistent with EPA 304(a) Guidance. It represents a level of protection that is well within the acceptable range of risk provided for in that guidance, reflects the use of a defensible scientific method by relying on the basis for fish advisories by the state Department of Health, and is a reasoned approach given the technical and scientific issues in developing PCB criteria as well as the potential dislocation of the state water quality program under very stringent PCB criteria.

### **iii. EPA Approval of Washington Human Health Water Quality Criteria for Arsenic**

Ecology adopted human health criteria of 10 µg/L for arsenic for water & organisms and organisms. These criteria are equivalent to the Safe Drinking Water Act (“SDWA”) maximum contaminant level (“MCL”) that applies in Washington for drinking water protection. Ecology based this decision on scientific information, regulatory precedent by other states and EPA, and high concentrations of naturally occurring arsenic in Washington.<sup>40</sup> Washington’s aquatic life water quality standards for arsenic are contained in the state’s water quality standards rule for aquatic life criteria (WAC 173-201A-240). Arsenic human health criteria are also contained in the EPA-promulgated NTR. 40 C.F.R. § 131.36.

Arsenic is a naturally occurring element present in the environment in both inorganic and organic forms. Arsenic is present in rocks, soils, and the waters in contact with them, and concentrations in ground waters in the United States generally are highest in the West, with elevated levels also commonly occurring in the Midwest and Northeast. (USGS, 2000). Inorganic forms of arsenic are considered to be the most toxic, and are found in groundwater and surface water, as well as in many foods. A wide variety of adverse health effects, including skin and internal cancers, and cardiovascular and neurological effects, have been attributed to chronic arsenic exposure, primarily from drinking water (NAS, 1999; CTD, 2013).

A large area of uncertainty in the regulation of arsenic is the form of arsenic present in marine fish. EPA reported in 1997 that the form of such arsenic is typically organic and thus not relevant to establishing human health criteria.<sup>41</sup> The report recommends that EPA use the Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) for arsenic.<sup>42</sup> In the west,

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<sup>38</sup>The Role of Hatcheries in North American Wild Salmon Production, The Great Salmon Run: Competition Between Wild and Farmed Salmon, Table IV-1 at 44 (06739-6752).

<sup>39</sup> Northwest Indian Fisheries Commission, Tribal Natural Resources Management, A Report from the Treaty Tribes in Western Washington at 4 (2015)(06530-6545).

<sup>40</sup> Department of Ecology. *Washington State Water Quality Standards: Human health criteria and implementation tools, Overview of key decisions in rule amendment*. August 2016. Ecology Publication no. 16-10-025 at 70. <https://fortress.wa.gov/ecy/publications/documents/1610025.pdf>

<sup>41</sup> EPA, Arsenic and Fish Consumption, 2-5 9Dec. 3,1997)(05043-5062).

<sup>42</sup> *Id.*, at 1.

where naturally high levels of arsenic in groundwater and geology are prevalent, six states have also adopted the SDWA arsenic MCL as their human health water quality criteria.

Up until 2001, the drinking water MCL for arsenic was 50 µg/L. EPA lowered the arsenic MCL to 10 µg/L in 2001 (EPA, 2001), following an extensive public process. The new standard went into effect for public supplies of drinking water nationwide in 2006. SDWA standards for arsenic in Washington are under the authority of the Washington Department of Health.

EPA is currently in the process of reviewing the toxicity information in the Integrated Risk Information System (“IRIS”) related to inorganic arsenic, and plans to submit its next draft to the National Research Council for future peer review (EPA, 2014). Nationwide, nearly half of the states use the SDWA MCL value of 10 µg/L for their arsenic HHC (ODEQ, 2011, P. 19). Use of SDWA regulatory levels as HHC is not unusual for both EPA and states. EPA developed CWA §304(a) national recommended HHC (for freshwater) for asbestos in 1991 and copper in 1998 based on SDWA regulatory levels (EPA 2002). The SDWA-based asbestos criterion (7,000,000 fibers/L) is currently in the NTR, was issued to several states in 1992, and was retained in the 1999 NTR revision; and the copper criterion (1,300 mg/L) was issued by EPA to California in 2000 (40 CFR 131.38 - Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California).

Ecology reasonably determined that it could not calculate arsenic criteria based on cancer without a reliable toxicity factor. EPA agrees that new cancer-based criteria for arsenic cannot be calculated at this time. In a May 6, 2016 filing with the United States District Court for the Western District of Washington, EPA stated that it will withdraw its proposed arsenic criteria for Washington because “extensive additional scientific analysis is necessary before revised criteria” for arsenic can be promulgated. *Puget Soundkeeper Alliance et. al. v. U.S.E.P.A.*, Case No. 2:16-cv-00293-JLR, EPA’s Motion for Summary Judgment (May 6, 2016) at 13. As EPA explained in the Declaration of Elizabeth Southerland, Director of the Office of Science and Technology with EPA’s Office of Water, “EPA did not update its CWA section 304(a) recommended criteria” for arsenic in 2015, and “EPA recognizes that there is substantial uncertainty surrounding the toxicological assessment of arsenic with respect to human health effects.” Declaration of Elizabeth Southerland (May 5, 2016) at 7.

Ecology reasonably determined that use of the EPA cancer potency factor would introduce a significant amount of uncertainty if used to develop HHC for arsenic:

- The inorganic arsenic cancer potency factor has been under reassessment for many years, and a date for finalization is not finalized (EPA, 2014). Newer information from EPA indicates that the CSF for arsenic could be finalized in EPA’s IRIS in 2017.
- EPA did not use the 1998 IRIS cancer potency factor in its development of the new Safe Drinking Water Act (SDWA) MCL of 10 ppb promulgated in 2001, nor did they depend on this value in their promulgation of the HHC for the state of California in 2000. In the 2000 California Toxics Rule, EPA expressed their finding of uncertainty around the effects of arsenic, and did not use the newer 1998 cancer potency factor (EPA 2000). EPA used the older cancer potency factor ((1.75 per (mg/kg)/day) derived from the drinking water unit risk (5E-5 per (µg/L)) that was used to calculate

the NTR arsenic criteria in its 1998 and 2002 national recommended guidance criteria calculations, but not as the basis of new regulations in either the 2000 California Toxics Rule or the new 2001 Safe Drinking Water Act MCL for arsenic.

On June 29, 2015, EPA published an update to the CWA 304(a) human health criteria.<sup>43</sup> The updated criteria did not include new criteria for arsenic. EPA stated in the announcement of the proposed updates in 2014 that the agency did not have the ability to update the arsenic criteria due to “outstanding technical issues.”<sup>44</sup>

Nationally, about half of the states have obtained EPA approval for arsenic human health criteria based on the SDWA MCL.<sup>45</sup> EPA should accordingly agree that the Ecology adopted arsenic criteria are protective of public health, consistent with EPA guidance and based on scientifically defensible methods.

### **III. EPA SHOULD UNDERTAKE RULEMAKING TO WITHDRAW THE FEDERAL HUMAN HEALTH WATER QUALITY CRITERIA FOR WASHINGTON**

Undoing EPA’s arbitrary and capricious disapproval of the Washington-submitted human health criteria and simultaneous promulgation of substitute criteria is a two-step process. First, as set forth above, EPA should reconsider the August 2016 Washington-submitted standards and approve those standards pursuant to CWA § 303(c)(3), (c)(4). Second, EPA should repeal or withdraw the substitute criteria in the EPA Final Rule.

#### **A. EPA Unlawfully Pre-Determined the Washington Water Quality Standards During the State and Federal Rulemaking Process**

The EPA Final Rule expresses what had been a political demand by EPA for human health water quality criteria in the state of Washington since at least 2013. The EPA demands were not based on the CWA, EPA guidance, sound science or applicable law. It was apparent, from the inception of rulemaking in early 2013 by Ecology through publication of EPA’s final rule during the last weeks of the previous administration, that EPA had taken a hardened position on two key factors—fish consumption rates and acceptable risk levels. Throughout this process, EPA refused to engage in any discussion on the merits or basis for its demands. The background information provided in the proposed and final rule Federal Register notices continued these obfuscations and in several cases, misrepresented the cited references and basis for the rule. Bereft of any basis under the CWA, its regulations and guidance, EPA pursued a post-hoc rationalization using a new, invented and ever-changing interpretation of Indian tribal treaty rights.

In a recent meeting of the Spokane River Regional Toxics Task Force on January 25, 2017, attended by EPA officials Christine Psyk, Angela Chung, Matthew Szelag, Lucy Edmundson and Brian Nickel, Angela Chung admitted that the final rule was based on EPA’s

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<sup>43</sup> See n.128. EPA, Final Updated Ambient Water Quality Criteria at 36987.

<sup>44</sup> See n.129. EPA, Human Health Ambient Water Quality Criteria: Draft 2014 Update.

<sup>45</sup> See n.5. Ecology Overview, at 44 (00050).

interpretation of treaty fishing rights. The EPA-interpreted “rights” are not rights contained in any underlying treaty. The EPA Final Rule is not even based on the treaty rights as described in the proposed rule, but rather on an entirely new interpretation of treaty rights set forth, for the first time, in the final rule. As EPA admitted in its response to comments on the proposed rule, EPA’s position on the treaty law has “evolved.”<sup>46</sup> The evolution here was in fact a quest to find some justification for a political decision that had been made by EPA years ago.

The EPA disapproval of the Washington human health water quality criteria represents a fundamental departure from the basis and authority for EPA review of state water quality standards. Comments by the National Association of Clean Water Agencies regarding EPA’s response to Washington’s proposed human health criteria rule provide a cogent summary of how EPA usurped the role of the State of Washington in developing water quality standards:

[T]he language in the CWA and the implementing regulations was not intended to give EPA authority to disapprove standards because the state’s science and policy decisions are not identical to [EPA’s] preference, policies and guidance. . . . In the case of Washington’s proposed rule, which in fact was consistent with the range of values and approaches included in existing federal guidance, EPA appears to ignore the flexibility afforded to states in its own guidance by insisting that the state’s program conform to EPA’s preferred approach. These tactics are inconsistent with the CWA’s cooperative federalism foundation and history that provides the states the responsibility for developing and approving water quality standards. . . . The structure established by the CWA—where EPA provides criteria recommendations and guidance and the states develop water quality standards based on that information as well as state policy and risk decisions (where a range of acceptable CWA options exist)—must be preserved to ensure that federal preference and the criteria recommendations do not become de facto regulations.<sup>47</sup>

EPA drew a line in the sand on these issues with the regulated community in Washington at a meeting on April 9, 2013. That meeting took place in the offices of EPA Region 10 in Seattle, Washington and was attended by then EPA Regional Administrator Dennis McLerran and Daniel Opalski, as the Director of the Region 10 Office of Water and Watersheds, representatives of Northwest Pulp & Paper Association, the Association of Washington Business, the Association of Washington Cities, the City of Everett, Weyerhaeuser and Inland Empire Paper Company. Mr. McLerran opened the meeting by stating that the criteria in Washington should be based on a 175 grams per day (g/day) fish consumption rate and risk policy of one in one million ( $1 \times 10^{-6}$  or  $10^{-6}$ ). Mr. McLerran explained, exhibiting ignorance of the basis for water quality standards, that this was so because “everyone should be protected to the same level.”<sup>48</sup> It is in fact impossible to protect every consumer to the same risk level as there will always be, in the case of fish consumption, a range of consumption rates and therefore

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<sup>46</sup> A. Chung, pers communication to Spokane River Regional Toxics Task Force (Jan. 25, 2017).

<sup>47</sup> K. Kirk, Letter to D. McLerran re EPA Efforts to Influence Washington Rulemaking at 2-3 (May 13, 2015)(04743-4745).

<sup>48</sup> D. McLerran, Pers. Communication to NWPPA Members (April 9, 2013).



a range of risks. Mr. McLerran further stated, with no basis under the CWA, that there had to be regional, meaning EPA regional, consistency on the toxic criteria. Mr. McLerran further stated that he was otherwise unwilling to discuss these factors with the regulated community.

EPA was equally opaque in its dealings with the state of Washington. Ecology presented the risk level policy issue to EPA Region 10 on numerous occasions over the past five years. The origins and basis for the one in one million risk policy were the subjects of several emails to EPA regional staff in January and February 2013.<sup>49</sup> EPA staff attended the February 8, 2013, and March 28, 2013 Ecology Policy Forum meetings where the current risk policy in Washington and EPA guidance on risk policy were discussed.<sup>50</sup> EPA staff never indicated in response to these emails or at the meetings that there has been any change in EPA policy—or any circumstances that require human health criteria in Washington to vary from national guidance.

Ecology specifically raised the risk policy issue to EPA national and regional staff at a meeting on March 20, 2013. The regional staff included Lisa Macchio, Mary Lou Soscia, Matthew Szelag, Lon Kissinger and Angela Chung.<sup>51</sup> The following questions and answers were recorded regarding EPA guidance on risk policy:

Question: Does EPA agree that [the Washington] risk level applies to [the] general population?

Angela Chung: EPA can't answer that now.

Question: Would EPA disapprove a standard based on  $10^{-6}$  for general population as long as  $10^{-4}$  is max for highly exposed?

Angela Chung: EPA can't answer that now.<sup>52</sup>

Ecology raised this issue with EPA staff again in emails and meetings in October and November 2013.<sup>53</sup> At these meetings between agency staff, the risk policy was listed as a topic for discussion. Ecology also presented its range of policy options at a public meeting on November 6, 2013.<sup>54</sup> EPA staff were present for the meeting but made no comment on national 304(a) Guidance for setting risk policy and there is no record of any comments from EPA regarding the policy options presented at this meeting. In meeting after meeting EPA staff remained silent on this issue. This included two public meetings held in 2013 and 2014, at seven delegate table meetings in 2012, 2013 and 2014, and at five Policy Forum meetings in 2013.

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<sup>49</sup> C. Niemi, Email to L. Kissinger (January 2, 2013)(03933-3934).

<sup>50</sup> See Attendance Lists for Meetings on June 24, 2013, November 6, 2013, and July 2014 (03935-3943).

<sup>51</sup> C. Niemi, Handwritten Notes (March 20, 2013)(“Dennis [EPA Region 10 Administrator] thinks the OR outcome was the right outcome, regionally wants to explore that position.”)(00455-0458).

<sup>52</sup> *Id.*

<sup>53</sup> M. Gildersleeve, Email to A. Chung and M. Szelag (Oct. 1, 2013)(03944).

<sup>54</sup> Ecology, Preliminary Draft – HHC Tools Summary, Water Quality Standards Rule Making, Human Health Criteria, Summary, (Nov. 6, 2013)(03945).

The issue was most pointedly raised in a meeting with EPA regional staff on March 11, 2014. After months of silence, Mr. McLerran apparently stated, with yet again profound ignorance of the EPA principles for environmental justice, that “175 grams a day at  $10^{-6}$  is a baseline for environmental justice.”<sup>55</sup> Mr. McLerran falsely represented that this assertion was based on EPA guidance. In a follow-up email, Ecology requested that Region 10 verify the existence of that guidance. Ecology specifically asked:

I have a copy of the document: “EPA Policy on Environmental Justice for Tribes and Indigenous Peoples.” It is a pre-decisional working draft dated November 14, 2012.

Is that the document Dennis referred to?

...

As we discussed, tribal members, and anyone eating high amounts of fish, are at higher risk. They are at a risk exactly proportionate to the consumption rate and will be at the same ratio (proportion) regardless of where the rule lands. Interpreting this section of the policy to mean that they can’t be at a higher risk would frustrate the entire system the HHC equations are based on and make it impossible to comply. **Is there a statement somewhere that one in a million risk rate is the baseline to establish environment justice?**<sup>56</sup>

Mr. Opalski responded to this email and confirmed that there is no such statement. In an email dated March 11, 2014, he conceded: “Regarding the environmental justice concern, you are right that there isn’t anything that will/does call out particular risk levels.”<sup>57</sup>

EPA Region 10 provided an additional comment on the Washington proposal in a letter dated July 1, 2014. This letter was in response to two letters from Washington State Senator Doug Ericksen. Sen. Ericksen, in his first letter on April 3, 2014, asked EPA Regional Administrator Dennis McLerran, “I specifically would like to know what your agency considers to be an appropriate cancer risk level for the state of Washington.”<sup>58</sup> Three weeks later Mr. McLerran responded with a letter that was not responsive to this question.<sup>59</sup> Sen. Ericksen sent a second letter to Mr. McLerran on May 28, 2014, pointing out that “I asked a specific question relating to a very important issue that will affect Washington’s economy and public health, but you did not provide me with a specific answer.”<sup>60</sup> Sen. Ericksen requested an answer to his question and rephrased it as follows:

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<sup>55</sup> K. Susewind, Email to D. Opalski (March 11, 2014)(00459-0461).

<sup>56</sup> *Id.* (emphasis added).

<sup>57</sup> D. Opalski, Email to K. Susewind (March 11, 2014)(03946).

<sup>58</sup> D. Ericksen, Letter to D. McLerran (April 3, 2014)(03947-3948).

<sup>59</sup> D. McLerran, Letter to D. Ericksen (April 24, 2014)(03949).

<sup>60</sup> D. Ericksen, Letter to D. McLerran (May 28, 2014)(03950-3951).

- (1) Have you or your staff indicated to the Washington Department of Ecology that there is a threshold cancer risk level that must be proposed for the state's criteria to receive approval?
- (2) Have you or your staff indicated to Ecology that a cancer risk level of  $10^{-6}$  is required or that it is a level you want the state to propose?
- (3) Have you or your staff provided any specific directives to Ecology outlining what you will accept for a cancer risk level for Washington?<sup>61</sup>

Mr. McLerran, in a letter dated July 1, 2014, responded that certain “groups could be provided less protection than they have now” if Washington uses a one in one hundred thousand risk policy.<sup>62</sup> Mr. McLerran and EPA refused to answer the basic question of whether there is a threshold cancer risk level for deriving human health criteria.

By the summer of 2014 it was clear that EPA was struggling to find some post-hoc rationalization for its demands. In some instances EPA would abandon any pretense of what is required under the CWA and simply assert its policy preferences are appropriate because “Dennis is concerned” or “Dennis feels.”<sup>63</sup> At other times EPA would assert grounds for its demands that later disappeared. In March and July 2014, EPA claimed that its preferred fish consumption rate and risk level was required as a matter of environmental justice. This argument is notably absent from both the EPA comment letter on the Ecology proposed rule and the Federal Register explanations for the basis of the EPA proposed and final rule.<sup>64</sup>

On March 23, 2015, EPA submitted a formal comment letter on the Ecology proposed rule. The letter was signed by Mr. Opalski, who participated in many of the meetings and telephone conversations and emails discussed above. In that letter, EPA asserted an entirely new basis for EPA's demands, stating that a one in one million risk level applied to tribal consumption rates is a “compromise position” of Washington tribes.<sup>65</sup> This is a statement that is not supported by any of the tribal letters that EPA has included in the rulemaking docket or the comments from tribes and tribal organizations on the Ecology draft rule. NWPPA submitted a Freedom of Information Act request to EPA for any documents that reflect the claim in the EPA comment letter. Matthew Szelag and Andre Szalay, an attorney in the Region 10 Office of Regional Counsel, initially responded in a telephone conference that there were no public records to support the statement by EPA. EPA nonetheless produced twenty-six pages of heavily redacted emails and publicly available documents, not one of which includes a communication from or on behalf of any tribe stating that a one in one million risk level is a “compromise

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<sup>61</sup> *Id.*

<sup>62</sup> D. McLerran Letter to D. Ericksen (July 1, 2014)(03952-3953).

<sup>63</sup> C. Niemi, Handwritten Notes (00455-8) and A. Chung, Pers. Communication, NWPPA Annual Meeting (June 6, 2013).

<sup>64</sup> D. Opalski, Letter to C. Niemi EPA Comment on Ecology Draft Rule (March 23, 2015)(07230-7249).

<sup>65</sup> *Id.*

position of the tribes.”<sup>66</sup> At most some tribal representatives have demanded a  $10^{-6}$  risk level but there is no evidence that any tribal representative has offered any scientific research or data to support what is a significant change in the risk policy applied in Washington.

The March 23, 2015, comment letter is also noteworthy as being the first time EPA asserted that tribal treaty rights require the application of a specific risk level to tribal consumption rates. EPA had never cited this rationale in prior meetings with the regulated community or in communications or meetings EPA had with Ecology staff. Having asserted this claim, however, EPA has consistently refused to explain how a treaty right to take fish dictates any specific risk management decision. This question was specifically posed to EPA by Ecology on July 15, 2015:

Does EPA have an OGC [Office of General Counsel] or other legal opinion or rationale on how risk level and treaty tribal rights are connected, and why 10-6 is looked upon by EPA as fulfilling the rights, and 10-5 is not? Could you send me a copy of the opinion/rationale document?<sup>67</sup>

This becomes one of the central questions in the EPA rule—what exactly is the legal and scientific connection between a tribal treaty right and the use of a specific risk level as a factor in the equation that derives water quality criteria. Consistent with its long-standing refusal to provide a legal, scientific and policy basis for its demands or engage in any meaningful public process, the EPA general counsel in an internal email directed EPA Region 10 to respond to Ecology by referring Ecology back to EPA’s March 23, 2015 comment letter and EPA’s February 2, 2015 decision to disapprove in part human health water criteria developed by the State of Maine.<sup>68</sup> In a December 11, 2012 telephone call between EPA staff and Idaho Tribes, EPA was specifically asked whether EPA would require “subsistence fishers to be protected to the same extent as the general population.”<sup>69</sup> Christine Psyk, Associate Director for Region 10, responded that “**EPA would not because that requirement does not appear in EPA regulations or guidance.**”<sup>70</sup>

It is not surprising that Ecology’s subsequent July 2015 draft responses to comments on the proposed Washington State rule concluded that there is no legal basis for requiring criteria based on tribal consumption rates using a  $10^{-6}$  risk level.<sup>71</sup>

EPA’s proposed and final rule exemplify its continued failure to provide a sound scientific rationale for its demands regarding risk policy and the fish consumption rate. In the EPA Final Rule the agency abandoned the treaty rights “analysis” contained in the proposed rule

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<sup>66</sup> M. Szelag, Email to J. Edgell (July 14, 2015)(06440-2); K. Brown, Email to B. Duncan (June 5, 2015)(06466-6467); M. Szelag, Email to P. Ford (March 17, 2015)(06464-6465), EPA FOIA Response, EPA-R10-2015-008998 (August 2015).

<sup>67</sup> *Id.*, M. Szelag, Email (06442).

<sup>68</sup> *Id.*, M. Szelag, Email (06440).

<sup>69</sup> D. Ostermann, Letter to EPA at 2 (January 9, 2013)(02308-2310).

<sup>70</sup> *Id.* (emphasis added).

<sup>71</sup> Ecology, Draft Responses to Comments on Proposed State Rule (July 2015) (04758).

and replaced it with a new and non-existent “treaty-reserved subsistence fishing right” in an effort to support its arbitrary and politically based human health criteria.

## **B. Tribal Treaty Rights Do Not Support EPA’s Final Rule**

Three key decisions drive EPA’s preferred human health criteria. EPA (1) treats the Indian tribal population as the “target general population”, (2) adopts a cancer risk level of  $10^{-6}$  to be applied to that newly defined “target general population”, and (3) uses a fish consumption rate based on unsuppressed fish consumption. These decisions are based not on sound scientific rationale, as required by the CWA, but rather on EPA’s own novel and expansive interpretation of tribal treaty fishing rights. In its proposed rule, EPA presented no legal analysis whatsoever to support its interpretation of the treaties. In its Final Rule, EPA invents a new and non-existent “treaty-reserved subsistence fishing right” as support for its interpretation. In fact, the federal courts have never interpreted the treaty reserved fishing right as a right to take and consume fish at a subsistence rate, and there is no legal support for EPA’s attempt to use the treaty fishing right as a rationale for imposing its preferred human health criteria on the State of Washington.<sup>72</sup>

EPA’s proposed rule did not cite to any legal authority supporting its reading of tribal fishing rights<sup>1</sup>. Moreover, EPA’s stated interpretation of the treaty rights, and its reliance on those “rights” in deriving human health criteria, was described in the proposed rule using ambiguous and inconsistent language suggesting that EPA itself was unsure of exactly what “rights” it was talking about, and giving the public little idea as to how EPA had used the “rights” as the basis for its decision-making. EPA alternately described its preferred criteria as necessary “to effectuate” treaty rights (80 Fed Reg. at 55,068 (§ IV.C.b)); and then to “effectuate and harmonize” such rights (*Id.* at 55,067 (§ IV.A.)). At one point EPA stated that the treaty rights merely “informed” EPA’s decisions (*Id.* at 55,066 (§ III.A)) at other times that EPA had “considered” treaty rights (*Id.* at 55,067 (§ IV.A); 55,068 § IV.C.b)). More than once EPA described its chosen human health criteria as based on what the treaties “could” require: “[W]here tribal treaty or other reserved fishing rights apply, selecting a FCR that reflects unsuppressed fish consumption *could be necessary in order to satisfy such rights*” (*Id.* at 55,066 (§ II.B.c)); “Independently, the treaties themselves *could require higher levels of protection*. The treaties themselves *could be interpreted to require a certain level of risk*; e.g. a *de minimis* level of risk that would most reasonably approximate conditions at the time the treaties were signed and the fishing rights were reserved” (emphasis added). *Id.* at 55,068 (§ IV.C.b)).

Perhaps unsurprisingly, given the number of comments pointing out the lack of any legal basis for EPA’s stated treaty rights position, EPA in the Final Rule has now discovered a new legal theory which supposedly supported its reading of the treaties all along. Gone from the Final Rule is the proposed rule’s ambiguous language about what the treaties “could” require;

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<sup>72</sup> At the time of EPA’s proposed rule, the only indication from EPA as to the legal basis for its treaty rights position came in response to an email request by the Department of Ecology for “a legal opinion or rationale on how risk level and treaty tribal rights are connected, and why  $10^{-6}$  is looked upon by EPA as fulfilling the rights, and  $10^{-5}$  is not.” EPA staff directed Ecology to EPA’s disapproval of the Maine water quality standards and associated documents, including the Maine Tribal Fishing Rights Letter. *See* n.68. EPA FOIA Response. Although not referenced in the proposed rule, the Maine Tribal Fishing Rights is referenced in the Final Rule. 81 Fed. Reg. at 85,423 n. 39.

somewhere between the proposed and final rule EPA has decided exactly what the treaties require. The right described as a “tribal reserved fishing right” in the proposed rule is now styled as a “treaty-reserved subsistence right” in the Final Rule. Whereas the word “subsistence” appears only twice in the proposed rule, it appears sixty times in the Final Rule, as EPA states for the first time that “[r]elevant case law, including Supreme Court precedents, unequivocally confirms that the treaty-reserved right to take fish includes the right to take fish for subsistence purposes.” (81 Fed Reg. at 85,423 (§ III.B.b)). However, the relevant case law—including that cited by EPA in the Final Rule—do not support EPA’s position, and in fact say just the opposite. The treaties only reserve to the Indian tribes the right to a fair share of the available fish.

**i. There is no “treaty-reserved subsistence right” to take fish**

Reserved treaty rights are not unlimited in scope. The right is shared with other citizens and is similar to a cotenancy. *Anderson v. Evans*, 314 F.3d 1006 (9<sup>th</sup> Cir. 2002). And tribal fishers may be subject to federal and state regulation, as long as that regulation is non-discriminatory and for conservation purposes. *Puyallup Tribe v. Dep’t of Game of Washington*, 391 U.S. 392, 398 (1968); *United States v. Oregon*, 657 F.2d 1009, 1016-17 (1981). Although treaties are to be interpreted liberally in favor of the Indians, it has long been the law that Indian treaties “cannot be re-written or expanded beyond their clear terms to remedy a claimed injustice or to achieve the asserted understanding of the parties.” *Choctaw Nation of Indians v. United States*, 318 U.S. 423, 432 (1943); *See also Gros Ventre Tribe v. United States*, 469 F.3d 801, 813 (9<sup>th</sup> Cir. 2006) (“Whatever duty exists at law today must be expressly set forth in statutes or treaties.”).

The treaties at issue here were negotiated by territorial Governor Isaac Stevens in 1854 and 1855 with several northwest Indian tribes, for the principal purpose of extinguishing Indian claims to land in what is now Washington State. *Washington v. Washington State Commercial Passenger Fishing Vessel Ass’n (“Fishing Vessel”)*, 443 U.S. 658, 661-62 (1979). A critical component of the Stevens Treaties was the reserved “right of taking fish, at all usual and accustomed grounds and stations. . . in common with all citizens of the Territory.” Federal courts began to recognize and interpret this treaty right as early as 1905. *See United States v. Winans*, 198 U.S. 371 (1905). The Supreme Court also held in the early 1900s that the treaties guaranteed to tribes access to all of their usual and accustomed fishing grounds, including those off-reservation. *See Seufert Bros. Co. v. United States*, 249 U.S. 194 (1919); *Winans*, 198 U.S. 371 (1905). Interpretation of the treaty right to take fish accelerated with a suit brought in 1970 by fourteen tribes and the federal government against the state of Washington, resulting in the “Boldt decision,” which was ultimately upheld by the U.S. Supreme Court in *Fishing Vessel*.

In *Fishing Vessel*, the Supreme Court held that “[b]oth sides have a right, secured by treaty, to take a fair share of the *available* fish.” *Fishing Vessel*, 443 U.S. at 684-85 (emphasis supplied). The right is more than merely a right to compete with nontreaty fishermen, but rather reserves for the tribes “the right to take a share of each run of fish that passes through tribal fishing areas.” *Id.* at 679. In determining what constitutes a fair share of fish, the Court viewed a tribal share of 50% of the available fish as a *ceiling*, which could be reduced if circumstances changed and a lesser quantity of fish was sufficient to meet the tribes’ “moderate living” needs. *Id.* at 685-89.

The underpinning of EPA's entire position with regard to cancer risk level, target population, and FCR is its assertion that the treaties reserve to tribes a right to take the amount of fish reflecting an unsuppressed, subsistence level of consumption. But in *Fishing Vessel*, the Supreme Court specifically considered and rejected the tribes' argument that the Stevens treaties "had reserved a pre-existing right to as many fish as their commercial and subsistence needs dictated." *Fishing Vessel*, 443 U.S. at 670, 679, 684-687. Other courts have consistently held that the treaty right to take fish does not include a right to take an amount of fish at the subsistence level existing when the treaties were signed. See *United States v. Adair*, 723 F.2d 1394 (9th Cir. 1983) (confirming to the Klamath Tribe an amount of water necessary to support its reservation hunting and fishing rights as currently exercised to maintain the livelihood of Tribe members, "not as these rights once were exercised by the Tribe in 1864"); *Nez Pearce Tribe v. Idaho Power Co.*, 847 F. Supp. 791, 808-10 (D. Idaho 1994) (holding that "Indian tribes do not have an absolute right to the preservation of the fish runs in their original 1855 condition, free from all environmental damage caused by the migration of increasing numbers of settlers and the resulting development of the land"). The Ninth Circuit has also confirmed that the treaty right to take fish does not entitle tribes to a particular minimum allocation of fish. *U.S. v. Washington*, 759 F.2d 1353, 1358-59 (9th Cir. 1985). There is simply no basis in law for EPA's extraordinary assertion that the treaties require that Washington's human health criteria be based on a subsistence level of fish consumption "regardless of whether such consumption is occurring today." 81 Fed. Reg. 85,425 (§ III.B.e).<sup>73</sup>

#### **1. EPA's treaty rights theory is not supported by any subsidiary environmental right**

In a footnote to the Final Rule, EPA makes another argument not contained in its proposed rule, appearing to read the treaty right to a share of available fish as containing an implied guarantee or "subsidiary right" to a certain quality of fish habitat or environment. However, rather than finding any such broad environmental servitude, courts have held that at most the treaties impose on the state a duty not to take actions that will harm fish runs.

The issue of whether the treaty right to take fish includes an implied "environmental" right has been addressed in two lines of cases. In Phase II of *U.S. v. Washington*, the Ninth Circuit overturned a district court decision and held that in *Fishing Vessel* the Supreme Court "did not adopt a comprehensive environmental servitude." *U.S. v. Washington*, 694 F.2d 1374, 1381 (1982). That decision was later vacated on procedural grounds. *U.S. v. Washington*, 759

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<sup>73</sup> As the Idaho Department of Environmental Quality noted in its responses to EPA's comments on Idaho's proposed human health water quality criteria and in its subsequently submitted criteria, there is also no legal support for EPA's position that tribal fishing rights mandate that tribes be treated as the general population. Idaho Department of Environmental Quality, Water Quality: Docket No. 58-0102-1201 Proposed Rule Rulemaking and Public Comment Summary, at 21 (07312-7348); Idaho Human Health Criteria Update Justification and Compliance with Clean Water Act (December 2016) at 11. EPA has promulgated state-wide criteria to protect *all* Washington citizens, including tribal members. According to the 2015 census, Washington's Native American and Alaska Natives populations combined constitute just 1.9% of Washington's population. See <http://www.census.gov/quickfacts/table/PST045216/53.00>. The Indian population in Washington is an obvious subpopulation of the entire state, and should be treated as such.

F.2d 1353 (9<sup>th</sup> Cir. 1985) (en banc). However, the Ninth Circuit “did not overrule its decision or reverse the analysis of the legal issues and its reasoning.” *Nez Pearce Tribe*, 847 F. Supp. at 808.

In subsequent litigation, the Western District of Washington held on cross motions for summary judgment that the treaty right to take fish imposes a duty on the State of Washington to refrain from building or operating culverts that hinder fish passage and thus decrease the number of fish available for tribal harvest. *U.S. v. Washington*, No. CV 70-9213, 2007 WL 2437166 (2007). After a bench trial the Court issued a permanent injunction directing the state to correct the barrier culverts. *U.S. v. Washington*, No. CV 70-9213, 2013 WL 1334391 (2013). The district court emphasized that the state’s duty not to block fish passage “is not a broad ‘environmental servitude’ or the imposition of an affirmative duty to take all possible steps to protect fish runs. . . but rather a narrow directive to refrain from impeding fish runs in one specific manner.” *U.S. v. Washington*, No. CV 70-9213, 2007 WL 2437166 at \*10 (2007); *U.S. v. Washington*, No. 70-9213, 2013 WL 1334391 at \*24 (2013) (“it is a narrow and specific treaty-based duty that attaches when the State elects to block rather than bridge a salmon-bearing stream with a roadbed”). The Ninth Circuit Court of Appeals’ recent affirmance of the district court decision was similarly narrowly based on the lower court’s factual findings that the consequence of the state’s building and maintaining the barrier culverts had been to diminish the supply of fish, and that if the culverts were replaced or modified to allow free passage of fish, several hundred thousand additional mature salmon would be produced every year. *U.S. v. Washington*, 827 F.3d 836, 853 (9<sup>th</sup> Cir. 2016).<sup>74</sup>

Most importantly, even if the treaties did contain some implied right to water quality or habitat protection, any such right is fully satisfied by Washington’s adopted human health criteria. There is no scientific rationale for EPA’s assumption that setting water quality standards that treat the tribal population as the target general population, establish a cancer risk level of  $10^{-6}$ , and utilize an unsuppressed fish consumption rate, would be more protective of the habitat than the approach to standards consistently used by EPA in the past. Nor is there evidence that EPA’s past approach to water quality standards—using the general population as the target population, and allowing states to choose a cancer risk level of either  $10^{-5}$  or  $10^{-6}$  so long as high consuming subpopulations are protected to  $10^{-4}$ —either has caused or will cause damage to the fisheries. The situation here is thus unlike the culverts case, where the court found clear evidence that the barrier culverts were diminishing fish quantity and thus adversely affecting the treaty fishing right. Finally, to the extent that Washington’s fish populations may be impacted by poor water

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<sup>74</sup> Although EPA suggests in the Final Rule that the Ninth Circuit’s decision in the culverts case supports the concept of an affirmative treaty right to a certain water quality, EPA’s position is directly contrary to that taken by the Department of Justice at oral argument in that case. The DOJ attorney represented to the Court that

As we see this right, it’s a purely negative one. It says to the State you can’t take action which blocks fish passage. It’s not a positive right that says the State is responsible for restoring habitat or restoring the fish. The District Court did not put it in those terms at all. This is only about actions of the State that have a direct effect on the fish runs by blocking a certain amount of habitat.

Transcript of oral argument in *USA v. State of Washington*, Case No. 13-35474 (9<sup>th</sup> Cir., Oct. 16 2015) at 16 (6964-6985).



quality, those populations are already protected by Washington's EPA-approved aquatic life criteria.<sup>75</sup> See WAC 173-201A-200, 210, 240.

## **ii. EPA has no authority to interpret tribal treaties**

In its Final Rule EPA cites for the first time to CWA § 511(a)(3), suggesting that this section of the Clean Water Act obligates it to “consider” tribal treaties to ensure that EPA's actions are “in harmony” and “do not conflict” with such treaties. This provision of the Clean Water Act simply states that the CWA should not be construed as “affecting or impairing the provisions of any treaty of the United States.” 33 U.S.C. § 1371(a)(3). This savings clause clarifies that the CWA does not overrule or take precedence over treaties. It does not give EPA unfettered discretion to invent a “treaty-reserved subsistence right” and then assert that only its preferred human health criteria is “in harmony” with that “right.”

It is particularly remarkable that EPA would base its derivation of Washington's human health criteria on its interpretation of Indian treaty language because EPA has no authority to interpret Indian treaties. EPA's interpretation of the CWA, a statute which it administers, may under certain circumstances be entitled to deference pursuant to *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 104 S. Ct. 2778 (1984). But EPA's interpretation of Indian treaties is not entitled to deference. See *Maine v. Johnson*, 498 F.3d 37, 45 (1<sup>st</sup> Cir. 2007). A precondition to deference under *Chevron* is a congressional delegation of administrative authority. *Adams Fruit Co., Inc. v. Barrett*, 494 U.S. 638, 649-50 (1990). EPA has not been delegated the authority to interpret Indian treaties. *Maine*, 498 F.3d at 45. To the contrary, the federal courts have sole jurisdiction over questions of treaty-guaranteed rights. See 28 U.S.C. § 1362; *Confederated Salish and Kootenai Tribes of Flathead Reservation, Montana v. Flathead Irr. & Power Project*, 16 F. Supp. 1292, 1295 (D. Mont. 1985). Moreover, to the extent that EPA is relying upon the Department of Interior Solicitor General's interpretation of the Stevens treaties in the Maine Tribal Fishing Rights letter, that interpretation is similarly not entitled to deference. *Cherokee Nation of Oklahoma v. Norton*, 389 F.3d 1074, 1078-79 (10<sup>th</sup> Cir. 2004) (Department of Interior's position based solely on its analysis of Indian treaties and agreements was not afforded any deference “because Congress did not give [the Department] the discretion to administer those treaties and agreements”).

## **C. EPA Has Violated APA Notice and Comment Rulemaking Requirements Requiring Reference to Legal Authority**

As outlined above, EPA's interpretation of treaty rights contained in the proposed rule *cited to no legal authority whatsoever*. Without any disclosure in the proposed rule of what legal authority EPA was purporting to rely upon, commenters on the treaty rights portions of the proposed rule were left to guess, and comment accordingly. Although it was not referenced in the proposed rule, some commenters were aware of the Maine Treaty Rights Letter from the Solicitor General and EPA's reliance on that letter in its disapproval of Maine's Water Quality Standards. However, as explained above, the treaty rights interpretation set out by EPA in the final rule is a completely new analysis, not contained in the proposed rule, and not set forth in the

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<sup>75</sup> Notably, EPA is deferring action on WAC 173-201A-510(4)(a)(i), Washington's newly adopted compliance schedule for aquatic life uses, stating that it must first complete an Endangered Species Act consultation.

Solicitor General's letter. Not only was EPA's invention of a new "treaty-reserved subsistence fishing right" in the final rule not put forth in the proposed rule, the word "subsistence" barely even appeared in the proposed rule. Similarly, EPA's new reliance in the final rule on CWA § 511 as providing it with the authority to interpret a tribal treaty right and engraft that right onto the Clean Water Act was not put forth in the proposed rule – CWA § 511 was never mentioned in the proposed rule.

Federal agencies must conduct rulemaking in accordance with the Administrative Procedures Act, which requires public notice of a rule and a meaningful opportunity for public comment on those changes. 5 U.S.C. § 553(b), (c). The notice of proposed rulemaking must include a "reference to the legal authority under which the rule is proposed." 5 U.S.C. § 553(b)(2). Such reference "must be sufficiently precise to appraise interested persons of the agency's legal authority to issue the proposed rule." *Louisiana Forestry Association, Inc. v. Solis*, 889 F. Supp. 2d 711, 732 (E.D. Pa. 2012) (citing Attorney General's Manual on the Administrative Procedure Act 29 (1947)). The required specification of legal authority must also be done "with particularity." *Global Van Lines, Inc. v. I.C.C.*, 714 F.2d 1290, 1298 (5<sup>th</sup> Cir. 1983) (emphasis in original). Because legal authority for EPA's treaty rights statements did not appear in the proposed rule, and because the legal theory put forth its final rule had never previously been disclosed, affected stakeholders were given no opportunity in the rule-making process to present legal analysis challenging that theory. EPA's Final Rule therefore violated the APA.<sup>76</sup>

#### **D. Just as with Trust Responsibilities to the Tribes, Compliance with the CWA is Sufficient to Meet Tribal Treaty Rights**

Notably, EPA's position in its final rule is contrary to the position taken in recent briefing before the federal district court for the Western District of Washington, in which EPA successfully asserted that its compliance with the Clean Water Act and its regulations satisfied any federal trust responsibility owed to the Spokane Indian Tribe. *Sierra Club v. McLerren*, Case No. 2:11-cv-01759-BJR Docket No. 91 at 40-43 (January 29, 2014). EPA explained that the scope of its trust responsibility is not defined by common law fiduciary duties or those imposed on a private trustee, but rather must be based on specific statutes and regulations. *Id.* at 41-42 (citing *United States v. Jicarilla Apache Nation*, 131 S. Ct. 2313, 2323, 2325 (2011)). As EPA asserted:

There is a "distinctive obligation of trust incumbent upon the Government in its dealings with [Indian tribes]." *Gros Ventre Tribe v. United States*, 469 F.3d 801, 810 (9<sup>th</sup> Cir. 2006) (quoting *United States v. Mitchell*, 463 U.S. 206, 225 (1983)). However, "[w]ithout an unambiguous provision by Congress that clearly outlines a federal trust responsibility, courts must appreciate that whatever fiduciary obligation otherwise exists, it is a limited one only." *Shoshone-Bannock Tribes v. Reno*, 56 F.3d 1476, 1482 (D.C. Cir. 1995). While that general trust relationship allows the federal government to consider and act in the tribes' interests in taking

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<sup>76</sup> EPA's newly discovered "treaty reserved subsistence fishing right" and its reliance on CWA § 511 also "raise novel legal or policy issues arising out of legal mandates" and thus render the Final Rule a significant regulatory action requiring full OMB review. *See infra*, at 63.

discretionary actions, *it does not impose a duty on the federal government to take action beyond complying with generally applicable statutes and regulations.* *Jicarilla*, 131 S. Ct. at 2325. Accordingly, in the absence of a specific duty that has been placed on the government with respect to the Tribe, the United States' general trust responsibility "is discharged by the agency's compliance with general regulations and statutes not specifically aimed at protecting Indian tribes." *Morongo Band of Mission Indians v. F.A.A.*, 161 F.3d 569, 574 (9<sup>th</sup> Cir. 1998); *Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 479 (9<sup>th</sup> Cir. 2000) (Bureau of Land Management's approval of gold mine satisfied trust obligations by the agency's compliance with NEPA); *Gros Ventre*, 469 F.3d at 814.<sup>77</sup>

Judge Rothstein ruled in favor of EPA on the trust responsibility issue, agreeing that EPA had discharged its trust duty by complying with the CWA. *Sierra Club v. McLarren*, Case No. 2:11-cv-01759-BJR Docket No. 120 at 23 (March 16, 2015).

Just as in *Sierra Club*, any responsibility owed by EPA to Indian tribes based upon the treaty fishing right at issue here is discharged by EPA's compliance with the CWA, the aim of which is to protect the water quality for the entire population. The Stevens treaties do not impose any specific duty on EPA to adopt a particular cancer risk or fish consumption rate for the benefit of the tribes. *See Shoshone-Bannock* (existence of treaty-created right to hunt did not impose duty on the federal government to litigate tribal water rights claims); *Vigil v. Andrus*, 667 F.2d 931, 934 (10<sup>th</sup> Cir. 1982) (treaty obligation to support and educate Indians did not expressly impose a duty on government to provide free lunches to all Indians); *Center for Biological Diversity v. U.S. Bureau of Land Mgt.*, 2015 WL 794327 \*2 (D. Nevada February 24, 2015) (treaty with Goshute and Shoshone Indians did not impose an "enhanced" statutory duty on federal government beyond what [environmental statutes] already require; "the federal government's compliance with the [environmental statutes] satisfies its general trust obligations to Indian tribes"). As EPA itself argued before Judge Rothstein, EPA's responsibility to the tribes is discharged by complying with the CWA. And compliance with the CWA means basing Washington's human health criteria on sound scientific rationale.

#### **E. Executive Orders and EPA Policies Regarding Consultation and Coordination with Tribes Do Not Support EPA's Final Rule**

EPA repeatedly refers in both the proposed and Final Rule to its consultation with Indian tribes as justification for the selection of an unsuppressed FCR of 175 g/day and a cancer risk level of  $10^{-6}$ .<sup>78</sup> In fact, EPA admits that it had insufficient evidence of unsuppressed FCR for the

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<sup>77</sup> *Sierra Club v. McLarren*, Case No. 2:11-cv-01759-BJR Docket No. 91 at 42 (January 29, 2014)(04811-4860.

<sup>78</sup> *See* EPA Proposed Rule, 80 Fed. Reg. 55,066 (§ II.B.c) ("If sufficient data regarding unsuppressed fish consumption levels are unavailable, consultation with tribes is important in deciding which fish consumption data should be used"); 80 Fed. Reg. 55,067 (§ IV.C.a) (FCR "reflects input received during consultation with tribes", "EPA considered the input received during consultation with tribes when selecting which fish consumption data would be used to estimate a FCR for calculating human health criteria. . ."); 80 Fed. Reg. 55,068 (§ IV.C.b) ("EPA considers  $10^{-6}$  to be sufficiently protective, and the tribes have supported this during consultation"); 80 Fed. Reg. at 55,074 (§ VI.F) ("At these meetings, the tribes consistently emphasized that the human health criteria should be derived using at least a minimum FCR value of 175 g/day, [and] a cancer risk level of  $10^{-6}$ . . ."). *See also* n.64, at 5

tribes, and lacking such data, allowed the tribes to dictate both the FCR and the cancer risk level.<sup>79</sup> EPA thus relies on its obligation to consult and coordinate with Indian tribes—and the tribes’ preferences as to the FCR and cancer risk—rather than complying with the CWA and promulgating human health criteria based on sound scientific rationale. EPA is required to consult and coordinate with Indian tribes. However, that requirement does not allow EPA to circumvent the requirements of the CWA.

EPA’s obligation to consult with Indian tribes regarding tribal treaty rights is not new. It dates back to at least 1994, with a memorandum issued by President Clinton.<sup>80</sup> See EPA Policy for the Administration of Environmental Programs on Indian Reservations” Memorandum on Government-to-Government Relations with Native American Tribal Governments, 59 Fed. Reg. 22,951 (Apr. 29, 1994) (“1994 Presidential Memorandum”). This Presidential Memorandum was followed by Executive Order 13084 “Consultation and Coordination with Indian Tribal Governments”, 63 Fed. Reg. 27655 (May 14, 1998) (references tribal treaty rights in introduction and §§ 2, 5), which was replaced two years later with Executive Order 13175 “Consultation and Coordination with Indian Tribal Governments”, 65 Fed. Reg. 67349 (Nov. 6, 2000) (references tribal treaty rights in §§ 2(a), 2(b), 3(a), 5(d)).

In 2009 President Obama issued a Presidential Memorandum on Tribal Consultation, 74 Fed. Reg. 57881 (Nov. 5, 2009) (“2009 Presidential Memorandum”); directing that all executive departments and agencies develop a detailed plan of actions each agency would take to implement Exec. Order No. 13175. In compliance with the 2009 Presidential Memorandum, EPA issued its EPA Policy on Consultation and Coordination with Indian Tribes (“EPA Consultation Policy”) on May 4, 2011. As with the executive orders and the presidential memoranda, this policy specifically references tribal treaties. EPA Consultation Policy at 3.<sup>81</sup>

By their terms, the tribal consultation executive orders and presidential memoranda are intended only to improve the internal management of the executive branch, and do not “create

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(“[T]he EPA supports the state’s decision to derive the human health criteria using a FCR of 175 g/day so long as the state also retains a cancer risk level of  $10^{-6}$ , which the tribes have generally viewed as a compromise minimum value in tribal consultation”) (emphasis added)(07237). See EPA Final Rule, 81 Fed. Reg. 85,426 (§ III.B.e) (“Consultation with tribes is important to ensure that all data and information relevant to this [FCR suppression data] issue are considered”); 81 Fed. Reg. 85,426 (§ III.C.a) (“The Washington tribes have generally agreed that 175 g/day is acceptable for deriving protective criteria at this time. . . .”); 81 Fed. Reg. 85,427 (§ III.C.b) (“Throughout tribal consultation, the tribes generally supported 175 g/day as an acceptable FCR . . . when accompanied by other protective input parameters. . . .”); 81 Fed. Reg. 85,435 (§ V.F) (“At these meetings, the tribes consistently emphasized that the human health criteria should be derived using at least a minimum FCR value of 175 g/day, [and] a cancer risk level of  $10^{-6}$ . . . .”).

<sup>79</sup> *Id.*

<sup>80</sup> The Bureau of Indian Affairs first promulgated internal guidelines for consultation with Indian tribes in 1972, which were broadened in 1977. *Lower Brule Sioux Tribe v. Deer*, 911 F. Supp. 395, 398-99 (D.S.D. 1995). In 1984, EPA issued its own policy establishing coordination and cooperation with tribes as to their environmental interests on reservation lands. EPA, Policy for the Administration of Environmental Programs on Indian Reservations (November 8, 1984)(06436-6439).

<sup>81</sup> Although the EPA Consultation Policy encompasses consultation regarding tribal treaties, EPA in August 2015 released a new draft Guidance for Discussing Tribal Treaty Rights. EPA, EPA Policy on Consultation and Coordination with Indian Tribes: Draft Guidance for Discussing Tribal Treaty Rights.

any right, benefit, or trust responsibility, substantive or procedural, enforceable at law by a party against the United States, its agencies, or any person.” 1994 Presidential Memorandum; Exec. Order No. 13084 § 7; Exec. Order No. 13175 § 10; 2009 Presidential Memorandum. They are “intended primarily as a political tool for implementing the President’s personal Indian affairs policy. . . .” *Lower Brule Sioux Tribe v. Deer*, 911 F. Supp. 395, 401 (D. S. D. 1995). They do not have the force of law and do not establish legal standards. *Hoopa Valley Tribe v. Christie*, 812 F.2d 1097, 1103 (9<sup>th</sup> Cir. 1986) (holding that 1994 Presidential Memorandum does not create any enforceable duty to consult with tribes).

Moreover, compliance with the executive orders and the Memorandum are specifically limited to those actions consistent with existing law. “[A]gencies shall adhere, *to the extent permitted by law*, to the following criteria when formulating and implementing policies that have tribal implications. . . .” Exec. Order No. 13175 § 3; “Executive departments and agencies shall carry out the provisions of this memorandum *to the extent permitted by law and consistent with their statutory and regulatory authorities* and their enforcement mechanisms.” 2009 Presidential Memorandum. Presidential executive orders cannot impose legal requirements on the executive branch that are inconsistent with a statute—such as the CWA—duly enacted by Congress. *United States v. Rhode Island Dep’t of Corr.*, 81 F. Supp. 3d 182, 188 (D.R.I. 2015) (*citing Chamber of Commerce of U.S. v. Reich*, 74 F.3d 1322, 1332-34 (D.C. Cir. 1996)); *Utah Ass’n of Counties v. Bush*, 316 F. Supp. 2d 1172, 1184 (D. Utah 2004).

Appropriately, EPA’s own consultation policy is entirely procedural, outlining how and when consultation is to occur, and the roles and responsibilities of those involved in the consultation process. The policy in no way *requires* that the agency adopt the tribes’ position. Thus, to the extent that EPA’s internal policies impose a duty on EPA to consult with tribes while promulgating water quality standards, that consultation does not require that EPA adopt whatever FCR or cancer risk level the tribes insist upon during that consultation. *Hoopa Valley Tribe*, 812 F.2d at 1103 (finding that BIA consultation guidelines were not binding, but even if they were, there was no violation of APA where tribe was consulted even though tribe’s advice was not accepted); *Lower Brule Sioux Tribe*, 911 F. Supp. at 401 (holding that although BIA guidelines require meaningful tribal consultation “that is not to say the BIA must obey those who are consulted or that the BIA must accept their advice”). Consultation is not the same as obeying those who are consulted. *Hoopa Valley Tribe*, 812 F.2d at 1103.

Executive orders, presidential memoranda and EPA policies simply do not allow tribes to dictate the appropriate cancer risk level and FCR. EPA has been clear in its proposed and final rules that it has allowed the tribes to do exactly that. The tribes “repeatedly asked” and “consistently emphasized” that the HHC “should be derived” using at least a minimum FCR of 175 g/day and a cancer risk level of  $10^{-6}$ , “which the tribes have generally viewed as a compromise minimum value in tribal consultation.”<sup>82</sup> Under the CWA EPA must base WQS on sound scientific rationale—not on what the tribes express as their preference during the consultation process. Choosing to use a FCR of 175 g/day and a cancer risk level of  $10^{-6}$  because

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<sup>82</sup> See n.78.

the tribes “consistently emphasized” in meetings that EPA “should” do so violates the CWA and its implementing regulations.

#### **F. There is no Basis in EPA Policy for the Risk Policy used by EPA in the Final Rule**

In its rulemaking, EPA misrepresented the Washington risk policy as setting a risk level for human health criteria applicable to all consumers at a level of one in one million. Prior to August 1, 2016, under WAC 173-201A-240(5) Ecology applied the one in one million (or  $1 \times 10^6$ ) risk level to the per capita consumption rate of the general population and not to more highly exposed subpopulations. EPA established this as a matter of law in *Dioxin/Organochlorine Center v. Clarke*, 57 F.3d 1517, 1524 (9<sup>th</sup> Cir. 1995).<sup>83</sup>

EPA fails to acknowledge or disclose that Ecology has interpreted and publicly stated that its risk policy for human health criteria in the state Water Quality Standards, WAC 173-201A-240(6), is intended to apply to the per capita consumption rate of the general population.<sup>84</sup> EPA also misrepresents that EPA and not Washington set the risk level for application of the NTR in Washington. Through the NTR process, EPA offered states the option of human health criteria calculated based on either a  $10^{-6}$  or  $10^{-5}$  risk level for the general population. Washington opted to use a  $10^{-6}$  risk level.<sup>85</sup> In the context of the NTR, however, this risk level is applicable to the per capita consumption rate of the general population on the assumption that NTR criteria are protective of higher consuming subpopulations at a  $10^{-4}$  risk level, and is consistent with long-standing EPA policy.

EPA and Washington have never assumed that the  $10^{-6}$  risk policy set forth in WAC 173-201A-240(6) would apply to all consumers of fish. Otherwise, Washington would not have adopted, nor would EPA have approved, coverage under the NTR where the criteria are based on a range of acceptable risk levels from  $10^{-6}$  to  $10^{-4}$ .<sup>86</sup> EPA described this in its brief in the *Dioxin* case as a choice “to provide a high level of protection for the average population in order to provide what they [Washington and other states] deem adequate protection for more sensitive populations.”<sup>87</sup>

The scope and intent of the  $10^{-6}$  risk policy in WAC 173-201A-240(6) was a central issue in a challenge to a dioxin water quality improvement plan or Total Maximum Daily Load (“TMDL”) allocation developed by EPA for the Columbia River. The dioxin TMDL was based on the same assumptions for the dioxin criterion in the NTR, including a FCR of 6.5 g/day. The TMDL was challenged in federal court on the basis of evidence that actual FCRs on the

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<sup>83</sup> EPA, Brief for the Defendant-Appellees, *Dioxin/Organochlorine Center v. Clarke*, Nos. 93-35973 & 93-36000 (May 31, 1994) (00899-0967).

<sup>84</sup> Ecology, Washington State Water Quality Standards: Human Health Criteria and Implementation Tools, Overview of Key Decisions in Rule Amendment, (January 2015)(Publication No. 14-10-058)(00001-0073).

<sup>85</sup> NTR, 57 Fed. Reg. 60,848-01, 60868 (00768-847); 40 C.F.R. §131.36(b)(14)(iii)(00848-0860).

<sup>86</sup> WAC 173-201A-240(6). EPA’s “policy in the NTR [is] to select the risk level that reflect[s] the policies or preferences of CWA programs in the affected States.” 65 Fed. Reg. 31,682, 31,699 (May 18, 2000)(00861-0898).

<sup>87</sup> See n.83. EPA, Brief for the Defendant-Appellees.

Columbia River for recreational fishers and Tribes was as high as 150 grams per day. The challengers contended that EPA should have applied WAC 173-201A-240(6) to derive a water quality criterion for dioxin that would protect all fish consumers to a level of  $10^{-6}$  based on the higher FCR. In *Dioxin/Organochlorine Center v. Clarke*, 57 F.3d 1517, 1524 (9<sup>th</sup> Cir. 1995), the court concluded that Washington did not intend to mandate a  $10^{-6}$  risk level for every fish consumer. The Ninth Circuit held that “the one-in-a-million risk level mandated by the state water quality standards for the general population does not necessarily reflect state legislative intent to provide the highest level of protection for *all* subpopulations but could reasonably be construed to allow for lower yet adequate protection of specific subpopulations.” 57 F.3d at 1524 (emphasis in original).<sup>88</sup>

In *Dioxin/Organochlorine Center*, EPA successfully argued that the mere fact that actual fish consumption in Washington is greater than the FCR in the TMDL (the same as the NTR) does not mean that the national criteria violate the state risk policy to protect human health under WAC 173-201A-240(6). EPA argued that the FCR and risk levels in the federal criteria are based on consumption of maximally contaminated fish, and are not intended to reflect actual consumption rates.<sup>89</sup> EPA also argued that the 6.5 grams per day fish consumption rate was not intended to accurately represent total consumption of fish, but instead the ingestion rate of a given contaminant.<sup>90</sup> According to EPA, the fish consumption rate used in the NTR was “intended to represent only a subset of total fish consumption.”<sup>91</sup> The FCR is the assumed amount of “maximum residue fish” consumed.<sup>92</sup> EPA further asserted that consuming anadromous fish, like salmon, is unlikely to cause ingestion of contaminants at a rate equal to consuming maximum residue fish.<sup>93</sup> EPA explained: “[T]he total fish consumption rate of various individuals is not determinative; the central question is whether the actual rate of ingestion [of a contaminant] is greater than that assumed by EPA.”<sup>94</sup>

To understand Washington’s prior risk policy, one must take into consideration the timing and sequence of the state’s adoption of its risk policy and when the state was formally subject to the NTR. The risk policy, WAC 173-201A-240(5), was promulgated as a state regulation in October 1992.<sup>95</sup> The promulgation of the regulation referencing the NTR was included with revisions to the state Water Quality Standards, WAC 173-201A-240(6), five years

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<sup>88</sup> The risk policies in the NTR were also affirmed in *Natural Resources Defense Council v. EPA*, 16 F.3d 1395 (4<sup>th</sup> Cir. 1993)(rejecting argument that 6.5 grams per day FCR failed to protect subpopulations with higher than average fish consumption). EPA’s range of acceptable risk levels was also upheld in other contexts. *E.g.*, *Ohio v. EPA*, 997 F.2d 1520, 1533 (D.C. Cir. 1993)(describing range of  $10^{-6}$  to  $10^{-4}$  as adequately protective of human health).

<sup>89</sup> *Natural Resources Defense Council v. EPA*, 16 F.3d 1395, 1402 n.11 (4<sup>th</sup> Cir. 1993).

<sup>90</sup> See n.83. EPA, Brief for the Defendant-Appellees.

<sup>91</sup> See n.83. EPA, Brief for the Defendant-Appellees at 44 (00954).

<sup>92</sup> *Id.*

<sup>93</sup> 16 F.3d at 1403; see also n.23. EPA, Brief for the Defendant-Appellees at 44 (00954).

<sup>94</sup> See n.83. EPA, Brief for the Defendant-Appellees at 45 (00955); EPA’s water quality criteria guidance includes a margin of safety for water consumption. 65 Fed. Reg. 31,682, 31693 (May 18, 2000) (00861-0898).

<sup>95</sup> WSR 92-24-037 (00968-0971).

later in November 1997.<sup>96</sup> In addition to the fact that the NTR does not extend the  $10^{-6}$  risk level to all consumers, there is the intervening ruling in *Dioxin/Organochlorine Center* that the state policy does not reflect any intent to protect high consumers to the  $10^{-6}$  risk level. A basic rule of statutory construction provides that the failure to amend an act following a judicial construction indicates approval of the construction.<sup>97</sup> Thus, if Ecology believed that the risk policy was intended to more broadly apply in Washington it would have amended the regulation prior to incorporating a reference to the NTR in the state Water Quality Standards.<sup>98</sup>

The EPA final rule is based on a misrepresentation that state risk policy requires all consumers to be protected to a risk level of  $10^{-6}$ . EPA ignored the chemical specific risk level and accompanying risk management decision made for the state PCB criteria. EPA improperly replaced and usurped a state risk management decision.

### **G. EPA Misrepresents its Policy and Guidance on Risk Factors used to Derive Human Health Water Quality Criteria**

In its draft and final rule the EPA misrepresented its guidance and supporting science for deriving human health water quality criteria. EPA failed to acknowledge that its 2000 Human Health Methodology provides for risk based criteria using a risk level of  $10^{-6}$  or  $10^{-5}$  for the 90<sup>th</sup> percentile consumption rate for the general population as long as the **median** consumption rate for highly exposed populations is protected to a level of  $10^{-4}$ .<sup>99</sup> The 2000 Human Health Methodology is clear that EPA deems both  $10^{-6}$  and  $10^{-5}$  risk levels as acceptable for the general population,<sup>100</sup> so long as the selection provides at least a  $10^{-4}$  risk level for the highest consumers of fish. “EPA generally regulates pollutants treated as carcinogens in the range of  $10^{-6}$  to  $10^{-4}$  to protect average exposed individuals and more highly exposed populations.”<sup>101</sup> “EPA also believes that criteria based on a  $10^{-5}$  risk level are acceptable for the general population as long as States and authorized Tribes ensure that the risk to more highly exposed subgroups (sport fishers or subsistence fishers) does not exceed the  $10^{-4}$  level.”<sup>102</sup>

EPA 304(a) Guidance addresses the need to consider carefully the impact of criteria on sensitive and subsistence populations. This guidance is reflected in the preference for local data

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<sup>96</sup> WSR 97-23-064. (00972-1019).

<sup>97</sup> *Hangman Ridge Training Stables, Inc. v. Safeco Title Ins. Co.*, 105 Wn.2d 778, 789, 719 P.2d 531 (1986).

<sup>98</sup> Under controlling Washington law, the sequence of all statutes relating to the same subject matter should be considered. *Dep’t of Labor and Industries v. Estate of MacMillan*, 117 Wn.2d 222, 229, 814 P.2d 194 (1991).

<sup>99</sup> See n.1. NTR at 60,855.

<sup>100</sup> EPA asked states covered by the NTR to tell EPA if they preferred the human health criteria for the state be applied at a risk level of  $10^{-5}$ . See n.25. NTR at 60,864. In general, the NTR established AWQC for states based on a  $10^{-6}$  risk level. *Id.* at 60,860. A state could ask EPA to remove the state from the rule, and adopt human health criteria for a carcinogen at a  $10^{-5}$  risk level. *Id.* If a state convinced EPA a  $10^{-5}$  risk level was appropriate, public notice and comment would not be required “because the Agency has considered in this rule that criteria based on either  $10^{-5}$  or  $10^{-6}$  risk levels meet the requirements of the Act.” *Id.*

<sup>101</sup> See n.1. NTR at 60,855; see also 65 FR 31,682, 31,699 (May 18, 2000) (00861-0898).

<sup>102</sup> See n.3, EPA, 2000 Methodology for Human Health, at 1-12 (00074-0258); see also n.1, NTR at 60,848, 60,863 (describing  $10^{-5}$  level as “adequately protective”).



over EPA default values for fish consumption rates.<sup>103</sup> That does not mean, however, that a  $10^{-6}$  risk level becomes a baseline for all population exposures. The EPA guidance directs that more specific information on consumption rates should be used to ensure that the criteria are within the protective range of EPA risk policy guidance:

EPA understands that fish consumption rates vary considerably, especially among subsistence populations, and it is such great variation among these population groups that may make either  $10^{-6}$  or  $10^{-5}$  protective of those groups at a  $10^{-4}$  risk level. Therefore, depending on the consumption patterns in a given State or Tribal jurisdiction, a  $10^{-6}$  or  $10^{-5}$  risk level could be appropriate. In cases where fish consumption among highly exposed population groups is of a magnitude that a  $10^{-4}$  risk level would be exceeded, a more protective risk level should be chosen.<sup>104</sup>

As seen in the above quoted passage from the 2000 Human Health Methodology, consumption patterns among subsistence populations and within a given tribal jurisdiction were considered in the methodology, despite EPA's assertions to the contrary.

Moreover, EPA has updated and amended this guidance numerous times since its publication in 2002 as documented on the EPA web site.<sup>105</sup> EPA actively considered tribal fishing rights in parallel CWA proceedings in 2001 and 2002 that were nearly contemporaneous to the 2000 guidance and predate each of its updates.<sup>106</sup>

#### **H. EPA Misrepresented Scientific Research in its Draft Rule**

The EPA Final Rule failed to acknowledge that its rationale for the proposed Washington human health criteria based on the claim that "EPA often uses  $10^{-6}$  as a *de minimis* risk level" misrepresents what EPA has long considered *de minimis* in deriving risk based criteria. EPA, across its environmental programs, the FDA and other federal agencies have consistently deemed  $10^{-4}$  as a *de minimis* risk level when applied to a highly exposed subpopulation. EPA has provided no explanation or justification why this long-standing national consensus is no longer applicable as a matter of science and public health to deriving water quality standards in Washington.

Rather than apply its own guidance and accepted science EPA has cobbled together a rationale that treaty rights afford some *de minimis* level of exposure and that must mean that tribal consumption rates have to be applied to a one in one million risk level to afford that *de minimis* risk protection. In doing so, the EPA ignores the long standing position of EPA and FDA programs that consider any exposure within a range of  $10^{-6}$  to  $10^{-4}$  to be a *de minimis* risk

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<sup>103</sup> See n.3, EPA 2000 Methodology for Human Health , at 1-12, 4-25.

<sup>104</sup> *Id.* at 2-6.

<sup>105</sup> <http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/index.cfm>.

<sup>106</sup> EPA, Meeting Summary of the Executive Council of the National Environmental Justice Advisory Council December 3, 4, and 6, 2001 (06107-6157); *see also* EPA, Fish Consumption and Environmental Justice (00268-0452).

and a level of risk that is acceptable and insignificant for setting human health standards, including water quality standards.

In support of its rationale EPA cited one scientific study in the proposed rule 80 Fed. Reg. 55,068 n. 26: “Castorina, Rosemary and Tracey J. Woodruff (sic), *Assessment of Potential Risk Levels Associated with the U.S. EPA Reference Values*, ENVIRONMENTAL HEALTH PERSPECTIVES, Vol. 111, No. 10, page 1318.” This article, which is about air quality and not water quality standards, does not support EPA’s implication that EPA considers a  $10^{-6}$  risk level to be a bright line standard for *de minimis* risk. The authors in fact state, “As a point of comparison, The U.S. EPA has defined 1 in 1,000,000 excess cancer risk as a *de minimis* risk level for cancer (Caldwell et al. 1998; Clean Air Act Amendments 1990; Fiori and Meyeroff, 2002; U.S. EPA 1991), **although regulatory actions are sometimes limited to instances where risk exceeds 1 in 100,000.**” (Emphasis added.)

“Fiori and Meyeroff, 2002<sup>107</sup>,” one of the references cited in support of the quoted statement in the Castorina article is a proposal for a risk management approach for exposure to mutagens that applies a *de minimis* risk standard. The article provides a short but instructive summary of “regulatory precedents for negligible carcinogenic risk”:

Acceptable risk is a concept that is required because of the adoption of the no threshold theory of carcinogenicity. Setting the acceptable risk level is a risk management decision....When EPA sets an acceptable risk for the general population (as for drinking water standards), the upper bound risk level of one excess cancer per 1 million people (i.e.,  $10^{-6}$ ) is used. (EPA, 1991).<sup>108</sup>

The “EPA 1991” references in both articles are the same, the draft NTR.<sup>109</sup> EPA states in the draft NTR that its risk based criteria are consistent with EPA guidelines that assume carcinogenicity is a “non-threshold phenomenon” and that there is no “safe” or “no-effect levels” of exposure.<sup>110</sup> Consistent with this guidance, EPA elected to use a “relatively stringent” cancer risk level of  $10^{-6}$  as applied to the general population and deemed that protective of “subsistence fishermen” who are more exposed than the general population.<sup>111</sup> It was the position of EPA then, based on the law and best available science, that the use of a  $10^{-6}$  risk level “is in part addressing the potential that highly exposed subpopulations exist by selecting a relatively stringent cancer risk level ( $10^{-6}$ ) for use in deriving State-wide criteria for carcinogens.”<sup>112</sup>

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<sup>107</sup> Fiori and Meyeroff, Extending the Threshold of Regulation Concept: *De Minimis* Limits for Carcinogens and Mutagens, 35, REGULATORY TOXICOLOGY AND PHARMACOLOGY, 209-16 (April 2002)(06355-6362).

<sup>108</sup> *Id.* at 210.

<sup>109</sup> EPA, Amendments to the Water Quality Standards Regulation to Establish the Numeric Criteria for Priority Toxic Pollutants Necessary to Bring All States into Compliance with Section 303(c)(2)(B), 56 Fed. Reg. 58,420 (Nov. 19, 1991) (06471-6529).

<sup>110</sup> *Id.* at 58,434.

<sup>111</sup> *Id.* at 58,435.

<sup>112</sup> *Id.*

EPA 304(a) Guidance also illustrates why protecting the highest subpopulation exposure at  $10^{-6}$  would be over-protective of designated uses:

It is important to understand that criteria for carcinogens are based on chosen risk levels that inherently reflect, in part, the exposure parameters used to derive those values. Therefore, changing the exposure parameters also changes the risk. Specifically, the incremental cancer risk levels are *relative*, meaning that any given criterion associated with a particular cancer risk level is also associated with specific exposure parameter assumptions (e.g., intake rates, body weights). When these exposure parameter values change, so does the relative risk. For a criterion derived on the basis of a cancer risk level of  $10^{-6}$ , individuals consuming up to 10 times the assumed fish intake rate would not exceed a  $10^{-5}$  risk level. Similarly, individuals consuming up to 100 times the assumed rate would not exceed a  $10^{-4}$  risk level. Thus, for a criterion based on EPA's default fish intake rate (17.5 gm/day) and a risk level of  $10^{-6}$ , those consuming a pound per day (i.e., 454 grams/day) would potentially experience between a  $10^{-5}$  and a  $10^{-4}$  risk level (closer to a  $10^{-5}$  risk level). (Note: Fish consumers of up to 1,750 gm/day would not exceed the  $10^{-4}$  risk level.) If a criterion were based on high-end intake rates and the relative risk of  $10^{-6}$ , then an average fish consumer would be protected at a cancer risk level of approximately  $10^{-8}$ . The point is that the risks for different population groups are not the same.<sup>113</sup>

EPA's 2000 Human Health Methodology clearly describes an "accepted risk range" of  $10^{-4}$  to  $10^{-6}$ , and provides that states may adopt a cancer risk level of either  $10^{-5}$  or  $10^{-6}$  for the general population, as long as "the risk to more highly exposed subgroups (sport fishers or subsistence fishers) does not exceed the  $10^{-4}$  level."<sup>114</sup> Remarkably, EPA's only reference in the proposed rule to this long held policy and practice of addressing the unique health risks to Indian tribes as a high consuming subpopulation is found in a footnote. 80 Fed. Reg. at 55065 n. 6. Rather than acknowledging that its proposed rule is a radical departure from the 2000 Guidance, EPA simply states that the 2000 Human Health Methodology "did not consider how CWA decisions should account for applicable reserved fishing rights, including treaty-reserved rights." *Id.* at 55068 (§IV.C.b). But as previously discussed, that is simply not the case.

The EPA Final Rule additionally fails to acknowledge that the federal government has repeatedly deemed a  $10^{-4}$  risk level to result in a *de minimis* risk when applied to more exposed subpopulations in deriving human health criteria under the CWA. EPA likewise failed to acknowledge that across EPA and FDA programs exposures at the level of risk between  $10^{-6}$  and  $10^{-4}$  are deemed acceptable because they represent an insignificant and essentially zero increased risk of cancer.<sup>115</sup>

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<sup>113</sup> See n.3, EPA, 2000 Human Health Methodology at 2-7 (00113).

<sup>114</sup> *Id.* at 1-12.

<sup>115</sup> See Attachment A, at 12.

“*De minimis*” is a term of art taken from the principle in common law of *de minimis non curat lex* meaning roughly that the “the law does not concern itself about trifles.”<sup>116</sup> EPA appears to be reversing decades of scientific research and sound public policy by implying that highly exposed populations will not be as well protected if their exposure risk is at a risk level of  $10^{-4}$ . On the contrary, it has been well understood prior to today that “if only a small population would be at greatest risk, the expected number of excess cancers corresponding to individual risks at the *de minimis* level of  $10^{-4}$  would still be zero.”<sup>117</sup> In actual practice, federal agencies across at least 132 regulatory decisions concluded that for small populations the *de minimis* lifetime risk was considered to be  $10^{-4}$ .<sup>118</sup> These regulatory decisions include actions by the Consumer Product Safety Commission, the Food and Drug Administration, the Occupational Safety and Health Administration and EPA programs for water quality, air, pesticide use, drinking water, toxic substances and radiation.<sup>119</sup> A survey of these decisions concluded that “for small-population effects, regulatory action was never taken for individual risk levels below  $10^{-4}$ .”<sup>120</sup>

The national policy on acceptable risk is based on an extended scientific evaluation and has withstood legal challenges.<sup>121</sup> The risk policy for human health water quality criteria was resolved in the NTR. The NTR and subsequent EPA guidance documents have consistently articulated a policy to accept human health water quality criteria protecting the general population at a risk level of  $10^{-6}$  or  $10^{-5}$  as long as higher exposed populations are protected to at least a level of  $10^{-4}$ .<sup>122</sup> EPA left it to each state to make its own risk management decision: “Adoption of a  $10^{-6}$  or  $10^{-5}$  risk level, both of which States and authorized Tribes have chosen in adopting water quality standards to date, represents a generally acceptable risk management decision, and EPA intends to continue providing this flexibility to States and Tribes.”<sup>123</sup>

A long line of EPA decisions affirm the existing risk policy in human health criteria approvals for states on the Great Lakes<sup>124</sup>, the California Toxic Rule, 40 C.F.R. § 131.38, and the state of Oregon human health criteria. The 2011 Technical Support Document for the Oregon criteria unequivocally states:

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<sup>116</sup> BLACK’S LAW Dictionary 524 (2009).

<sup>117</sup> Attachment B, at 18 (quoting D. Kocher, Criteria for Establishing *de minimis* Level of Radionuclides and Hazardous Chemicals in the Environment (1996) (Report ES/ER/TM-187 prepared by the Oak Ridge National Laboratory for the U.S. Department of Energy).

<sup>118</sup> See Attachment B, at 18.

<sup>119</sup> Travis, Richter, Crouch, Wilson and Klema, Cancer Risk Management, 21 ENVIRON. SCI. TECHNOLOGY 415, Table 1 (1987).(05083-5088).

<sup>120</sup> *Id.* at 418.(05086).

<sup>121</sup> See Attachment A at 11-12.

<sup>122</sup> See n.1, NTR at 60855; see also n. 42, EPA, 2000 Human Health Methodology at 1-12 (October 2000)(00104).

<sup>123</sup> See n.3, EPA, 2000 Human Health Methodology at 2-6 (00112); see also Attachment A at 13-14.

<sup>124</sup> EPA, Final Water Quality Guidelines for the Great Lakes System, 60 Fed. Reg. 15366-01 (March 23, 1995) (01775-1907)

EPA has identified a risk level range of  $1 \times 10^{-6}$  (1:1,000,000) to  $1 \times 10^{-5}$  (1:100,000) to be an acceptable risk management goal for the general population....

EPA's 2000 Methodology states that criteria based on a  $10^{-5}$  risk level are acceptable for the general population as long as States and authorized Tribes ensure that the risk to more highly exposed subgroups (sport fishers or subsistence fishers) does not exceed the  $10^{-4}$  risk policy.<sup>125</sup>

Under the EPA risk policy, compared to the current state risk policy, the general population consumption rate results in criteria that will be protective to a level more stringent than  $10^{-7}$ . The 100<sup>th</sup> percentile of tribal consumption will be protected to  $10^{-5}$ . Ecology concluded that the mean consumption rate for the general population in Washington is 18.8 g/day including all fish.<sup>126</sup> The effective rate for deriving human health water quality criteria is substantially less than this value, as it includes both fish that are store bought and anadromous fish that do not spend sufficient time in Washington waters to bio accumulate toxics. As such, EPA would effectively require that water quality standards applicable to Washington protect the general population at a risk level of  $10^{-8}$ , and median tribal consumption rates at a risk level of  $10^{-6}$ .

Criteria based on existing EPA 304(a) Guidance would be fully protective of tribal consumption without this dramatic change in risk policy. If EPA used 17.5 g/day as the consumption rate for the general population in Washington, at a risk level of  $10^{-6}$ , the resulting criteria would be protective to a consumption rate of 175 g/day at a  $10^{-5}$  risk level and for a consumption rate of 1,750 g/day at a risk of  $10^{-4}$ . The Washington Office of Financial Management estimates that there are 104,000 American Indian and Alaska natives in Washington.<sup>127</sup> If EPA followed established guidance and science and applied a  $10^{-6}$  risk level to the general population the resulting exposures at risk levels of  $10^{-5}$  and  $10^{-4}$  would not predict a single excess cancer risk for this population—a result that is more stringent than EPA guidance which calls for no excess cancer risk at the median consumption rate for high consuming populations at  $10^{-4}$ .

ARCADIS, Summary of Health Risk Assessment Decisions in Environmental Regulations (March 6, 2015), Attachment A, explains in detail why tribal consumers would have the equivalent of a zero-increased risk of cancer if EPA complied with its own guidance in setting criteria based on the general population consumption rate. The risk of cancer from all causes far outweighs the possible risk of cancer from exposure to chemicals in the environment. *Id.* at 2. To add some meaning to these risks, the excess cancer risk that may occur as a result of exposure to a carcinogen in the environment in Washington on an annual basis is 0.54% while the lifetime risk of cancer based on a risk level of  $10^{-4}$  used to set water quality criteria is

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<sup>125</sup> EPA, Technical Support Document for Action on the State of Oregon's New and Revised Human Health Water Quality Criteria and Associated Implementation Tools Submitted July 12 and 21, 2011, at 27 (October 17, 2011)(01908-2010).

<sup>126</sup> Ecology, Fish Consumption Rate Technical Support Document Version 2.0, 40-44 (January 2013)(Ecology Publication No. 12-09-058)(05398-5591).

<sup>127</sup> *Id.* at 18.

0.00014%. *Id.* at 8-9. A  $10^{-4}$  risk level is clearly an acceptable and protective upper bound risk level to use in deriving water quality criteria as there is no real increase in the overall risk of incurring cancer. This is especially true when comparing an **annual** risk to a risk level based on a **lifetime** exposure every day for 70 years. In theory only, a  $10^{-4}$  risk level would predict one excess cancer in Washington. *Id.* at 2. This is only theoretical as risk managers across EPA and other federal programs have long considered this level of risk insignificant and, in fact, the absence of any real risk. *Id.* at 9-21. It is inexplicable why EPA is proposing to ignore and in some sense misrepresent the best available science and policy in risk management.

Overestimating risks in the interest of precaution must consider the consequences of such choices. *Id.* at 5. As ARCADIS explains, there is “a cost to reducing the levels of chemicals in the environment to meet more-stringent limits, a cost that may be measured in dollars, energy usage, or the risk of injury to workers to meet lower standards.” *Id.* An estimate of those costs in terms of additional water quality treatment and energy consumption is provided in HDR, Treatment Technology Review and Assessment for Association of Washington Business, Association of Washington Cities and Washington State Association of Counties (December 2013)—Attachment C. HDR evaluated the cost of compliance with the Oregon human health water quality criteria for arsenic and PCBs at values that are the equivalent of the EPA-proposed criteria for Washington. *Id.* at 9, Table 1. The HDR report looked at advanced treatment systems using reverse osmosis and membrane filtration and estimated the range of unit costs for improving a 0.5 Million Gallon a Day (mgd) facility at \$60 to \$162 per gallon per day. *Id.* at 37. The range of unit costs for improving a 25 mgd facility to advanced treatment is \$10 to \$35 per gallon per day of treatment capacity. *Id.* For a 5 mgd facility HDR estimated the incremental cost of advanced treatment in total net percent value (as of 2013) at between \$75 to \$160 million. *Id.* at 38, Table 9.

If these costs are applied to just the 73 major NPDES facilities identified by EPA in its economic impact analysis, the total net present value (as of 2013) would be in the range of \$5.5 billion and \$11.7 billion. This does not include the 333 minor permits identified by EPA or the thousands of facilities and additional municipalities that are subject to NPDES stormwater permits. HDR also points to substantial collateral impacts above the cost of construction and operation of advance treatment including higher energy consumption, increased greenhouse gas emissions and increased solids production. *Id.* at ES-2.

EPA has failed to provide any meaningful basis for a risk policy that would be the equivalent of  $10^{-8}$  to  $10^{-6}$ . The best the agency can muster after several years of refusing to engage publicly on this issue is the frustrating *non sequitur* that some tribes have treaty rights to fish, and therefore have a right to safe and healthy fisheries, and therefore the tribal consumption rates must be protected to a risk level of  $10^{-6}$ . The logical fallacy in this rationale is in substance no more revealing than the position advanced by EPA over the past four years which is in effect that “we want it this way because we want it this way.”

EPA has simply failed to provide a rationale for changing accepted risk management policies. Any obligation of the United States under tribal treaties is the same obligation EPA has to all residents in the state of Washington—the obligation to establish criteria that are protective of beneficial uses including the beneficial uses attributed to high fish consuming populations, which encompass tribal consumers.

Before today EPA has never wavered on the risk management guidance that evolved prior to and since the adoption of the NTR in 1992. In June 2015 EPA published final updated ambient water quality criteria for the protection of public health in accordance with section 304(a)(1) of the Clean Water Act.<sup>128</sup> The risk-based criteria were updated based on the application of a  $10^{-6}$  risk level to a general population consumption rate. EPA did not suggest that its risk management decision placed high consuming populations at risk and certainly did not consider whether there was any scientific basis for protecting those populations at a risk of  $10^{-6}$ . The criteria are in fact based on the same understanding of the range of acceptable risk levels used in developing the NTR and the 2000 Human Health Methodology.<sup>129</sup> EPA proclaimed, based on this approach, that its recommended criteria “are scientifically derived numeric values that EPA determines will generally protect aquatic life or human health from adverse effects of pollutants in ambient water.”<sup>130</sup>

There is no basis for the rule’s departure from EPA’s consistent approach that high consuming populations are adequately protected at a risk level of  $10^{-4}$ . And by adequately protected, EPA has meant that the exposures at the levels recommended under national guidance afford an insignificant and essentially zero additional risk of cancer. EPA has no basis for differentiating its obligations to an entire population including subpopulations of more highly exposed members based on the existence of tribal treaty rights. EPA and reviewing courts have consistently said that high consuming populations are protected within the existing framework for risk. EPA has offered no scientific (or legal) basis for the assertion that tribal fish consumers in Washington are uniquely at risk and require some additional level of protection.

#### **I. THE EPA FINAL RULE IS NOT CONSISTENT WITH THE EPA ENVIRONMENTAL JUSTICE GUIDANCE**

The EPA final rule is inconsistent with the EPA guidance on environmental justice EPA guidance on environmental justice, including consideration of tribal consumption rates, in fact supports the human health criteria submitted by Washington to EPA.

In May 2015 EPA published formal guidance on considering environmental justice in agency actions, including rulemaking.<sup>131</sup> The guidance document does not reference and therefore implicitly endorses EPA’s long-standing policy on the acceptable range of risk levels. The following discussion from the guidance document exemplifies how the agency will determine whether there is a disproportionate impact from an agency action:

It is important to note that the role of the analyst is to assess and present differences in anticipated impacts across population groups of concern to the

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<sup>128</sup> EPA, Final Updated Ambient Water Quality Criteria for the Protection of Public Health, 80 Fed. Reg. 36986 (June 29, 2015)(04807-4810).

<sup>129</sup> EPA, Human Health Ambient Water Quality Criteria: Draft 2014 Update, EPA-820-F-14-003 at 2 (May 2014)(01772-1774).

<sup>130</sup> See n.83. EPA, Final Updated Ambient Water Quality Criteria at 36987.

<sup>131</sup> EPA, Guidance on Considering Environmental Justice During the Development of Regulatory Actions (May 2015)(available at <http://www3.epa.gov/environmentaljustice/resources/policy>) (05991-6046).

decision-maker and the public. The determination of whether there is a potential disproportionate impact that may merit Agency action is ultimately a policy judgment informed by analysis, and is the responsibility of the decision-maker. These analyses will depend on the availability of the scientific and technical data. As noted in the *Draft Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* (U.S. EPA 2013), examples of the type of information that may be useful to provide to decision-makers for considering whether or not effects are disproportionate include: the severity and nature of health consequences; the magnitude of the estimated differences in impacts between population groups; **mean or median exposures or risks to relevant population groups**; distributions of exposures or risk to relevant population groups; characterization of the uncertainty; and a discussion of factors that may make population groups more vulnerable.<sup>132</sup>

Thus, the EPA 2015 environmental justice guidance focuses on the mean or median consumption or exposure rate of a more highly exposed subpopulation in the same manner as the 2000 EPA guidance focuses on the range of acceptable risk levels.

EPA has consistently defended this range as protective of the entire population under the principles of environmental justice. This was addressed in the response to comments for the 1995 Final Water Quality Guidelines for the Great Lakes System where EPA approved the use of a one in one hundred thousand risk level:

Commentators argued that a 15 gram per day assumption in the methodology would not adequately protect populations that consume greater than this amount (e.g. low-income minority anglers and Native Americans). And that such an approach therefore would be inconsistent with Executive Order 12898 regarding environmental justice (February 16, 1994, 59 Fed. Reg. 7629). **EPA believes that the human health criteria methodology, including the fish consumption rate, will provide adequate health protection for the public, including more highly exposed sub-populations.** In carrying out our regulatory actions under a variety of statutory authorities, including the CWA, EPA has generally viewed an upper bound incremental cancer risk in the range of  $10^{-4}$  to  $10^{-6}$  as adequately protective of public health. As discussed above, the human health criteria methodology is based on a risk level of  $10^{-5}$ . Therefore, if fish are contaminated at the level permitted by the criteria derived under the final Guidance, individuals eating up to 10 times (i.e., 150 grams per day) the assumed fish consumption rate would still be protected to  $10^{-4}$  risk level.<sup>133</sup>

In promulgating the California Toxics Rule in 2000 EPA specifically rejected several comments that the  $10^{-6}$  to  $10^{-4}$  risk policy offended notions of environmental justice.

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<sup>132</sup> *Id.* at 6-7 (emphasis added) (06002-6003).

<sup>133</sup> *See* n.124, EPA, Final Water Quality Guidelines for the Great Lakes System at 15 (emphasis added)(01789).



EPA believes that this rule is consistent with the terms of the Executive Order (E.O.) on Environmental Justice. EPA rejects the notion that the rule is, in any respect, discriminatory against persons or populations because of their race, color, or national origin. The final rule establishes criteria that are designed to ensure protection of the public, including highly exposed populations. While some groups and individuals, including some low income and minority persons and populations, may face a greater risk of adverse health effects than the general population due to their particular fish consumption patterns, EPA believes that these groups will nonetheless receive a level of public health protection within the range that EPA has long considered to be appropriate in its environmental programs (e.g.,  $10^{-4}$  to  $10^{-6}$  incremental cancer risk). **Obviously, as long as there is variability in fish consumption patterns among various segments of the population, it would be impossible for EPA to ensure that all groups would face identical risk from consuming fish. Therefore, EPA has sought to ensure that, after attainment of water quality criteria in ambient waters, no group is subject to increased cancer risks greater than the risk range that the EPA has long considered protective.** EPA disagrees that individuals who consume up to a pound of fish per day would face a  $10^{-3}$  cancer risk. Given that the basis of the criteria are a 6.5 gm/day assumption at a  $10^{-6}$  risk level, individuals who consume a pound of fish per day would be protected within the established acceptable range of  $10^{-4}$  to  $10^{-6}$ , consistent throughout current EPA program office guidance and regulatory actions.<sup>134</sup>

There is no question that the 2015 guidance on environmental justice fully reflects the consideration of tribal consumption rates and concerns about the EPA trust and treaty obligations. EPA failed to explain how it is possible for its 304(a) Guidance on risk levels to be consistent with environmental justice but not consistent with a newly invented interpretation of tribal treaty rights.

#### **J. EPA Used a Fish Consumption Rate that is Not Supported by Available Technical Information**

The 175 g/day FCR used by EPA is not supported by technical information and is not necessary to protect the residents of Washington. It is also inconsistent with past EPA guidance and conflicts with the Washington risk policy to protect the average consumption rate of the general population, including consumers and non-consumers, to a risk level of  $10^{-6}$ .

EPA is required under the EPA-approved state risk policy to use a fish consumption rate that is less than 19 g/day. Ecology documented 18.8 g/day as the average consumption rate for consumers only for the general population in Washington.<sup>135</sup> Ecology has not provided a consumption rate that reflects both consumers and non-consumers but it must be substantially

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<sup>134</sup> EPA, California Toxics Rule Response to Comments Report, CTR-002-005a (Dec. 1999) (emphasis added)(02311-3812).

<sup>135</sup> See n.81. Ecology, Fish Consumption Rate Technical Support Document Version 2.0 at 95 (05514).

lower than 18.8 g/day given that Ecology estimated that between 25% and 70% of the general population in the state of Washington do not eat fish.<sup>136</sup>

The FCR used by EPA in the rule exceeds that used by any state to derive human health criteria, with the exception of the Oregon human health criteria adopted in 2012.<sup>137</sup> EPA guidance recommends for exposure to carcinogens that states use an FCR that protects the 90<sup>th</sup> percentile consumption of the general population while ensuring that subsistence fishers are protected at their average intake rate. EPA guidance recommends a default fish intake rate of 17.5 grams a day to protect the general population.<sup>138</sup> The same guidance recommends that state criteria use an average intake rate of 142.4 grams a day for subsistence fishers. “EPA believes that the assumption of 142.4 grams/day is within the average consumption estimates for subsistence fishers based on studies reviewed.”<sup>139</sup>

The rationale for this guidance is to ensure that human health criteria are protective within a broad range of consumption rates in a state from the general population at the 90<sup>th</sup> to the 99<sup>th</sup> percentile rates of consumption. EPA guidance describes the use of the general population consumption of 17.5 grams a day at the 90<sup>th</sup> percentile as a baseline to ensure protection of the 99<sup>th</sup> percentile of the general population and average consumption rate for more exposed populations including subsistence fishers.<sup>140</sup> EPA confirmed this policy in a conference call with state regulators on April 17, 2013. EPA was asked during that conference call how EPA defines high exposure or high risk population for determining fish consumption rates. Beth Doyle, on behalf of EPA, responded that “EPA used the 99<sup>th</sup> percentile of the general population, as representing what they figured approximated the median consumption rate for subsistence fishers.”<sup>141</sup> The fish consumption rate of 175 grams a day used by Ecology is ten times the 90<sup>th</sup> percentile consumption rate established by EPA guidance for the general population. EPA should acknowledge that 175 g/day is based on the 50<sup>th</sup> to 90<sup>th</sup> percentiles of tribal consumption rates. Oregon developed the 175 grams a day FCR for its criteria using the same consumption studies relied on by EPA in the final rule and concluded that the value reflects the 95<sup>th</sup> percentile consumption rate in the Columbia River Inter-Tribal Fish Commission study and the 90<sup>th</sup> percentile consumption rates documented for Puget Sound Tribes.

Consequently, the recommended rate [175 g/day] reflects consumption of salmon, and lamprey relative to rates documented in the CRITFC study (to protect at least 95% of fish consumers in Oregon), as well as marine fish and shellfish relative to

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<sup>136</sup> See n.5. Ecology, Fish Consumption Rate Technical Support Document Version 2.0.

<sup>137</sup> Ecology, Fish Consumption Rates & Risk Levels for Carcinogens Used in Human Health Criteria Calculations, (November 5, 2013)(00259-00267).

<sup>138</sup> See n.5. Ecology, Overview at 15 (00021).

<sup>139</sup> See n.3. EPA, 2000 Human Health Methodology at 4-27 (00186).

<sup>140</sup> See n.1064. EPA, Fish Consumption And Environmental Justice at 28. (“EPA’s default value of 142.4 grams/day for subsistence fishers reflects the 99<sup>th</sup> percentile value of 142.41 grams/day for freshwater and estuarine ingestion by adults.”)(00311).

<sup>141</sup> D. Essig, Email to S. Kirsch (April 5, 2013)(00453-454).

the rates documented in the Puget Sound studies (to protect at least 90% of fish consumers in Oregon).<sup>142</sup>

The following table from an Ecology technical support document developed for the state rulemaking summarizes the consumption rates from Tribal studies. The 175 grams per day FCR used by EPA exceeds the median (50<sup>th</sup> percentile) for all Tribes and the 90<sup>th</sup> percentile for all Tribes with the exception of the Tulalips, 206 g/day, and the Suquamish, 489 g/day. The Suquamish consumption rate shown in this table is heavily influenced by high consumption rates reported by a few individuals. In other studies, such as the Tulalip study, similar high rates were excluded from the analysis as “outliers.”<sup>143</sup> Oregon DEQ recognized that “[w]ith no adjustments made for the high consumption rates, it was noted that the reported means may be highly influenced by the consumption of just a few individuals.”<sup>144</sup>

**Table 37. Summary of Fish Consumption Rates, All Finfish and Shellfish**

Population	Source of Fish	Number of Adults Surveyed	Mean	Percentiles		
				50 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>
General population (consumers only)	All sources: EPA method	2,853	56	38	128	168
	All sources: NCI method	6,465	19	13	43	57
Columbia River Tribes	All sources	464	63	41	130	194
	Columbia River	–	56	36	114	171
Tulalip Tribes	All sources	73	82	45	193	268
	Puget Sound	71	60	30	139	237
Squaxin Island Tribe	All sources	117	84	45	206	280
	Puget Sound	–	56	30	139	189
Suquamish Tribe	All sources	92	214	132	489	797
	Puget Sound	91	165	58	397	767

See Polissar et al., 2012, Table E-1.

The percentiles for tribal consumption rates in this table are overstated. Ecology commissioned a report from the consultants who conducted the Tulalip, Squaxin and Suquamish studies. In a report dated October 3, 2013, the data was analyzed for a hypothetical combination of the Puget Sound Tribes.<sup>145</sup> This analysis calculated the median Tribal consumption rate to be 127.2 g/day for all fish.<sup>146</sup>

<sup>142</sup> Oregon DEQ, Oregon Human Health Criteria Issue Paper Toxics Rulemaking at 9 (May 24, 2011)(00476-0559).

<sup>143</sup> Oregon DEQ, Human Health Focus Group Report Oregon Fish and Shellfish Consumption Rate Project at 10-12 (June 2008)(00560-631).

<sup>144</sup> *Id.* at 12 (00631).

<sup>145</sup> Polissar and Hippe, Fish Consumption Rates for a Hypothetical Combination of Puget Sound Tribes (October 31, 2013)(00632-657).

<sup>146</sup> *Id.*, Table A at 2.

ARCADIS also developed a composite distribution of Washington Tribal consumption rates based on the TSD data.<sup>147</sup> That distribution calculates the median 90<sup>th</sup> and 95<sup>th</sup> percentiles for Tribal consumption rates to be 55.05, 137.77 and 178.69 grams per day.<sup>148</sup>

The Clean Water Act and EPA regulations require human health water quality criteria to protect exposures that may result from pollutants in state waters. EPA guidance accordingly does not require human health criteria to regulate pollutant levels in marine fish that do not accumulate pollutants in waters of the United States within the jurisdiction of a state. The default value of 17.5 grams a day in EPA guidance thus reflects freshwater/estuarine fish and shellfish only.<sup>149</sup> The range of consumption rates in the 2000 EPA guidance similarly do not include marine fish.<sup>150</sup>

Salmon, as a marine species, should accordingly be excluded from the consumption rate used to derive Washington's criteria. The data on fish tissue samples from salmon in Puget Sound indicates that the predominant fraction of PCBs detected is accumulated while the fish are in the ocean-phase of their life cycle.<sup>151</sup> Including all salmon in the FCR is not likely to benefit public health for contaminants that are accumulated in marine waters beyond the jurisdiction of the state.<sup>152</sup> Even for the small percentage of salmon that are resident for longer periods of time more stringent water quality standards are not likely to result in significant reductions in the body burden of contaminants.<sup>153</sup>

Excluding salmon from the fish consumption rate lowers the median consumption rate documented for Puget Sound Tribes to 80.4 g/day—less than half of the FCR used by EPA for the proposed criteria.<sup>154</sup> The ARCADIS analysis independently calculated the “non-salmon” median consumption rate for Washington Tribes at 29.73 g/day.<sup>155</sup> Even if consumption rates are

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<sup>147</sup> ARCADIS, Derivation of Alternative Human Health Risk-Based Ambient Water Quality Criteria Using Probabilistic Methods for the State of Washington, Attachment A at 7 (February 4, 2014)(00658-0723).

<sup>148</sup> *Id.*

<sup>149</sup> See n.3. EPA, 2000 Human Health Methodology at 4-25 (EPA default fish consumption rates represent the ingestion of “freshwater and estuarine fish”)(00184).

<sup>150</sup> *Id.* at 4-25; see also Ecology, Decision Factors in Development of Human Health Criteria (November 6, 2013)(“Current federal guidelines do not use salmon in the fish consumption rate because most do not reside for their full life in water regulated by the Clean Water Act”)(00726-727).

<sup>151</sup> See National Council for Air and Stream Improvement (NCASI), Comments on Publication No. 11-09-050, Fish Consumption Rates Technical Support Document, Appendix A, page 11 (January 11, 2012) (00728-0740), see also NCASI, Comments on Proposed Human Health Criteria and Implementation Tools Rule Proposal, Attachment A at 2 (March 4, 2015) (00741-0767).

<sup>152</sup> *Id.*

<sup>153</sup> Hope, Acquisition of Polychlorinated Biphenyls (PCBs) by Pacific Chinook Salmon: An Exploration of Various Exposure Scenarios, 8 INTEGRATED ENVIRONMENTAL ASSESSMENT AND MANAGEMENT 553, 561 (January 2012)(05073-5082).

<sup>154</sup> See n.145. Polissar and Hippe, Fish Consumption Rates for a Hypothetical Combination of Puget Sound Tribes at 2 (00633).

<sup>155</sup> ARCADIS, Derivation of Alternative Human Health Risk-Based Ambient Water Quality Criteria Using Probabilistic Methods for the State of Washington, Attachment A at 7 (00698).

apportioned for that portion of the salmon that are found to accumulate pollutants and are resident in Puget Sound for a longer period in their life cycle, the median tribal consumption rate for all seafood and the portion of anadromous fish intake was estimated by Ecology consultants to be 108 grams per day.<sup>156</sup> The ARCADIS analysis calculated a Washington tribal consumption rate with apportioned salmon at a median rate of consumption to be 37.78 g/day and of 122.63 g/day at the 95<sup>th</sup> percentile.<sup>157</sup>

EPA improperly bases its criteria on what are alleged to be “suppressed” fish consumption rates for northwest tribal members. 80 Fed. Reg. 55,068. It is impossible to comment on this basis for the rule as EPA does not cite to a single study, document or statistic of any kind to support its contention other than “consultation with Washington tribes and Columbia River basin tribes.” *Id.* Reliance on meetings that are closed to the public and on propositions for which there is no documentation or scientific analysis is a facial violation of CWA and APA requirements to provide a scientific basis for proposed standards and an opportunity for public participation.

The only regulatory authority cited in this section of the Federal Register notice for the draft rule is a cross-reference to section II.B.c in the same notice that includes a representation that EPA “generally” recommends “selecting a FCR that reflects consumption that is not suppressed by fish availability or concerns about the safety of available fish.” 80 Fed. Reg. 55,065. The sole authority for this proposition is a “Frequently Asked Questions” document that EPA posted online in January 2013. *See* 80 Fed. Reg. 55,065, n. 15. EPA has conceded that this posting was done improperly and previously assured state regulators that the document would be withdrawn.<sup>158</sup> EPA has also conceded that it is not sure how suppression should be factored into criteria.<sup>159</sup>

It is difficult to fathom how EPA “generally” recommends consideration for suppressed consumption rates when until December 2016 there was no guidance on how EPA and the states are supposed to factor this into developing water quality criteria.<sup>160</sup> EPA has long advised states to use data to develop criteria (with a preference for local or regional data over national data).<sup>161</sup> EPA is now asserting that it is permissible for it to consider unknown impacts on consumption rates for which there is no data.

EPA does not reference any evidence to support its contention that fish consumption in Washington is suppressed due to “concerns about the safety of available fish.” There is likewise a lack of any information in the rule docket posted by EPA to support such a contention. EPA

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<sup>156</sup> *See* n.145. Polissar and Hippe, Fish Consumption Rates for a Hypothetical Combination of Puget Sound Tribes at 2 (00633).

<sup>157</sup> *See* n.155.

<sup>158</sup> S. Braley, Email to M. McCoy, C. Niemi and D. Essig (January 9, 2014); S. Braley, Email to D. Essig and C. Niemi (July 28, 2014)(06692-6693).

<sup>159</sup> D. Essig, Email to B. Burnell (September 30, 2014)(06691).

<sup>160</sup> *See* n.64. EPA, Comment on Ecology Draft Rule.

<sup>161</sup> *See* n.3. EPA, 2000 Human Health Methodology at 2-2 (00108).

should acknowledge the results of a recent fish consumption survey in Idaho on this issue that found only 3% of the population indicated that they limited fish consumption due to health concerns about pollution or contamination.<sup>162</sup>

It is also inappropriate to employ an alleged lack of availability of fish as a factor in setting human health criteria. Human health criteria do not impact fish availability. Imposing repressive human health criteria on the state of Washington will in no way enhance fish runs or increase the availability of fish.

Even if it was appropriate to factor availability of fish in consideration of consumption rates, EPA has failed to cite to any evidence that there is a lack of availability of fish that would drive suppression. There is no documentation for example that tribal members lack access to fish. On the contrary, the tribal consumption studies document that at most two individual tribal members eat as much as 1600 g/day of fish.<sup>163</sup> This is nearly twice the historic rate of consumption used in deriving the Spokane Tribe of Indians human health criteria.<sup>164</sup>

It appears, moreover, that tribal consumption fish rates have been growing and are not suppressed. In 1992, the Columbia River basin tribes claimed a fish consumption rate of 150 g/day.<sup>165</sup> By 2012, the Columbia River Inter-Tribal Fish Commission was claiming that the 95<sup>th</sup> percentile of tribal members were consuming 175 g/day.<sup>166</sup> In 2015 the Northwest Indian Fisheries Commission Columbia River Inter-Tribal Commission claimed that there are contemporary consumption rates of between 500 and 918 g/day.

EPA itself has increased the FCR from 6.5 g/day in the NTR to 22 g/day in criteria included in the 2015 update to the Section 304 human health criteria. This trend is consistent with national data showing an increase in consumption of fish over time. The U.S. Department of Agriculture has reported that the per capita consumption of fish grew from 12.4 pounds to nearly 16 pounds from 1980 to 2009.<sup>167</sup> This indicates that consumption rates used in setting criteria are

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<sup>162</sup> Idaho Department of Environmental Quality, Considerations in Deciding Which Fish to Include in Idaho's Fish Consumption Rate: Policy Summary at 7. (August 2015)(04792-4802).

<sup>163</sup> See n.64. EPA, Comment on Ecology Draft Rule; see also n.104. Polissar and Hippe, Fish Consumption Rates for a Hypothetical Combination of Puget Sound Tribes.

<sup>164</sup> EPA, Letter approving Spokane Tribe of Indians Water Quality Standards, *Technical Support Document* dated December 11, 2013 at 22 (December 9, 2013) (the criteria are based on a FCR of 865 g/day) (01020-1071).

<sup>165</sup> *Dioxin/Organochlorine Ctr. v. Clarke*, 57 F.3d 1517, 1524 (9th Cir. 1995)(“In addition, the EPA argues that even assuming consumption of 150 grams of fully contaminated fish, as claimed by DOC, the risk level would still be only 23 in a million.”).

<sup>166</sup> EPA, Technical Support Document for Action on the State of Oregon's New and Revised Human Health Water Quality Criteria and Associated Implementation Tools Submitted July 12 and 21, 2011 at 27 (October 17, 2011)(01908-2010).

<sup>167</sup> U.S. Census Bureau, Statistical Abstract of the United States: 2012, Sec. 3, Table 217 (August 2011)(06986).

adjusting with increasing consumption rates. This is illustrated in the following figure from the Idaho negotiated rulemaking process:<sup>168</sup>

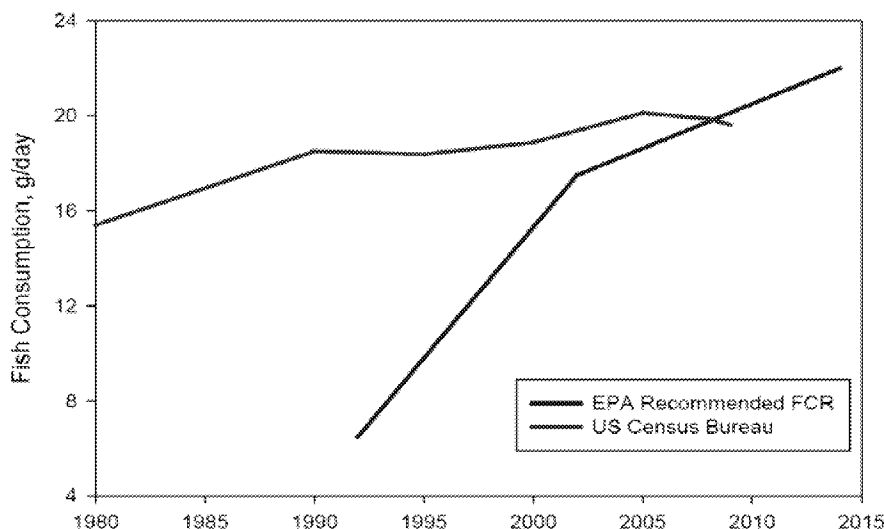


Figure 4. Per capita consumption of fish in the United States and EPA-recommended fish consumption rate (FCR), 1980–2014.

It is not appropriate to speculate on future consumption rates or restoration of consumption rates based on historic information. If fish consumption rates increase over time that information should inform future reviews by EPA of any criteria it makes applicable to the state of Washington.

#### **K. Compliance with Downstream Water Quality Standards is not a Basis for the Proposed Rule**

EPA has improperly relied on the need to protect downstream water quality standards as a basis for its demands that the state of Washington use a high tribal consumption rate and  $10^{-6}$  risk policy. This was declared by Mr. McLerran in his meeting with Mr. Opalski and the regulated community in April 2013.<sup>169</sup> It was echoed by EPA staff at meetings with state officials.<sup>170</sup> It was repeated in a July 1, 2014 letter from Mr. McLerran wherein he states he “supports regional consistency among Region 10 states” to protect downstream waters under 40 C.F.R. § 131.10(b).<sup>171</sup> EPA repeats these post-hoc rationalizations in the Federal Register notice.

<sup>168</sup> See n.162. Idaho Department of Environmental Quality, Considerations in Deciding Which Fish to Include in Idaho’s Fish Consumption Rate: Policy Summary at 7.

<sup>169</sup> D. McLerran, Pers. Communication (April 9, 2013).

<sup>170</sup> See n.63. C. Niemi, Handwritten Notes and A. Chung, Pers. Communication, NWPPA Annual Meeting (June 6, 2013).

<sup>171</sup> See n.62. D. McLerran, Letter.

80 Fed. Reg. at 55068 (“Use of [175 g/day] should thus help provide for the attainment of and maintenance of downstream WQS in Oregon.”)

EPA regulations, 40 C.F.R. § 131.10(b), do not require upstream states to adopt the same water quality standards as downstream states. EPA issued a Frequently Asked Questions document in June 2014 that allows the state to comply with this provision in EPA regulations by adopting a narrative provision in its water quality standards that discharges from the state will not cause or contribute to a violation of applicable downstream state water quality standards.<sup>172</sup> The EPA-approved water quality standards for Washington satisfy the requirements of 40 C.F.R. § 131.10(b) by expressly providing that all “Upstream actions must be conducted in manners that meet downstream water quality criteria.” WAC 173-201A-260(3)(b).

Ecology considered and applied the Oregon human health criteria in NPDES permits recently issued on the Columbia River.<sup>173</sup> As of today, these are the only NPDES permits on the Columbia River, both issued by Ecology, that have actually applied the Oregon human health water quality criteria. To our knowledge, Oregon has yet to address its human health criteria in a NPDES permit decision. Ecology has also applied its regulation to protect downstream water quality standards in the Total Maximum Daily Load plan for dissolved oxygen on the Spokane River.<sup>174</sup> Ecology has made the same consideration of the downstream Spokane Tribe of Indians criteria in developing a PCB TMDL on the Spokane River.<sup>175</sup> The actions of Ecology, consistent with the state water quality standards, demonstrate that there is no basis for EPA’s demand that the same toxic criteria apply in both Oregon and Washington.

EPA and federal courts have recognized that upstream states are not required to have the same water quality standards as downstream states. EPA, for example, denied a petition for rulemaking by the Ozark Chapter of the Sierra Club to establish the same criteria for states on the Mississippi and Missouri Rivers.<sup>176</sup> EPA made clear that upstream states are not required to adopt criteria that are the same as downstream states:

The federal regulations state, “In designating uses of a water body and the appropriate criteria for those uses, the State shall take into consideration the water quality standards of downstream waters and shall ensure that its water quality standards provide for the attainment and maintenance of the water quality

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<sup>172</sup> EPA, Protection of Downstream Waters in Water Quality Standards: Frequently Asked Questions, EPA-820-F-14-001, at 6 (June 2014) (“Adoption of narrative criteria or numeric criteria (or both) that are protective of downstream waters are viable options under 40 C.F.R. 131.10(b).”)(03954-3965).

<sup>173</sup> Ecology, Draft Response to Downstream Waters Comments (July 2015)(addressing a NPDES permit issued in Longview)(04949-4954); *see* Ecology, Fact Sheet for NPDES Permit WA0000124 Weyerhaeuser Longview, at 60 (06987-7133); Ecology, Fact Sheet for NPDES Permit WA0000256 Georgia Pacific Consumer Products (Camas), LLC, pp. 35 and 60, Table 25 (March 10, 2015)(07134-7229).

<sup>174</sup> *See* n.172. EPA, Protection of Downstream Waters FAQ.

<sup>175</sup> Ecology, Spokane River PCB Source Assessment 2003-2007 (April 2011)(Ecology Pub. No. 11-03-013)(06808-6963).

<sup>176</sup> EPA, Decision on Petition to Publish Water Quality Standards for the Mississippi and Missouri Rivers within Arkansas, Illinois, Iowa, Kansas, Kentucky, Missouri, Nebraska and Tennessee (June 25, 2004)(available at <http://www2.epa.gov/sites/production/files/2015-02/documents/sierra-club-petition-response.pdf>)(06754-6807).



standards of downstream waters.” 40 C.F.R. §131.10(b). **The regulations do not compel states to adopt the same criteria and uses, nor do they suggest that this is the only way a state can meet these requirements. The water quality program is structured to provide states with flexibility to determine the best way to meet their obligations under § 131.10(b).**

(Emphasis added.)<sup>177</sup>

In the response to the Mississippi and Missouri River petition EPA pointed out that there is no violation of 40 C.F.R. §131.10(b) simply because upstream states rely on different risk management decisions:

As discussed in the “Statutory and Regulatory Background” section, EPA publishes section 304(a) criteria based on a  $10^{-6}$  risk level for carcinogens; states may select a specific risk level based on their own risk management decisions. EPA believes that adoption of criteria within a risk level of  $10^{-6}$  (one in a million incremental risk for cancer) or  $10^{-5}$  (one in one hundred thousand incremental risk for cancer) represents an acceptable range of risk management discretion for states and tribes. Within the petition states, each state adopts criteria to protect human health based on risk management decisions. Iowa, Arkansas, Tennessee, and Nebraska have adopted PCB criteria based on a  $10^{-5}$  risk level; Illinois, Kentucky and Missouri have adopted PCB criteria based on a  $10^{-6}$  risk level; and Kansas chose to adopt a PCB criterion to protect human health at a  $10^{-7}$  risk level.<sup>178</sup>

EPA Region 10 has advised Washington and Idaho to consider EPA decisions on other state water quality standards in the state risk management decisions.<sup>179</sup> EPA should do the same with respect to its rule. Based on the long-standing precedent, the CWA does not require the risk policy decisions in Washington to match those in Oregon. EPA is obligated to comply with the federally approved risk policy in Washington that is well within the range of risk policies that are protective of public health. “Consistency” with the Oregon criteria is not a requirement of the CWA and is not required under 40 C.F.R. §131.10(b). As such it is not a sufficient or appropriate post-hoc rationalization for EPA to compel implementation of its preferred human health criteria in Washington.

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<sup>177</sup> *Id.* at 4.

<sup>178</sup> *Id.* at 18 (citing EPA, 2000 Methodology for Human Health Criteria). *See also* EPA, Response to Comments for Water Quality Standards; Withdrawal of Certain Federal Water Quality Criteria Applicable to California, New Jersey and Puerto Rico, EPA-HQ-OW-2012-0095, 4-5 (2012)(EPA approval of human health criteria for New Jersey that are less stringent than downstream water quality standards)(01072-1085).

<sup>179</sup> L. Macchio, Letter to D. Essig (January 20, 2015)(01086-1088).

**L. The Relative Source Contribution value used by EPA is arbitrary and capricious**

The Relative Source Contribution (“RSC”) is a factor in the derivation of criteria representing the portion of exposure to a contaminant that is attributable to sources regulated by the CWA.<sup>180</sup> It is arbitrary and capricious for EPA to use a RSC factor of less than 1.0 in deriving human health criteria where EPA is simultaneously using a fish consumption rate that includes all fish whether or not that fish is purchased from a store or a marine fish that does not accumulate pollutants in waters regulated by the state’s water quality standards. By using an FCR that reflects the 90<sup>th</sup> to 95<sup>th</sup> percentile of tribal consumption rates that includes all fish, there is no other source of water intake or fish consumption that should be accounted for in a RSC of less than 1.0.

EPA 2014 guidance clearly states that human health considerations in deriving water quality criteria are based on the risk only from exposure to fish and drinking water:

A complete human exposure evaluation for toxic pollutants of concern for bioaccumulation would encompass not only estimates of exposures due to fish consumption but also exposure from background concentrations and other exposure routes[.] The more important of these include recreational and occupational contact, dietary intake from other than fish, intake from air inhalation, and drinking water consumption. For section 304(a) criteria development, EPA typically considers only exposures to a pollutant that occur through the ingestion of water and contaminated fish and shellfish. This is the exposure default assumption, although the human health guidelines provide for considering other sources where data are available. **Thus the criteria are based on an assessment of risks related to the surface water exposure route only.**<sup>181</sup>

This guidance is the same as EPA set forth in the 2000 Human Health Methodology: “[Ambient Water Quality Criteria] for the protection of human health are designed to minimize the risk of adverse effects occurring to humans from chronic (lifetime) exposure to substances through the ingestion of drinking water and consumption of fish obtained from surface waters.”<sup>182</sup>

EPA Region 10 has endorsed the use of an RSC of 1.0 where a state is including all salmon in its criteria development methodology. The state of Oregon applied a RSC of 1.0 in the human health criteria approved by EPA in 2012. The rationale for this risk management decision included a discussion that it is a preferred means to account for salmon consumption compared

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<sup>180</sup> See n.5. Ecology, Overview at 21 (00027).

<sup>181</sup> EPA, Water Quality Standards Handbook, Chapter 3, Section 3.1.3 (2014)(available at <http://www2.epa.gov/wqs-tech/water-quality-standards-handbook>)(emphasis added)(06158-6215).

<sup>182</sup> See n.3. EPA, 2000 Human Health Methodology at 1-11 (00103). See D. Essig, Email to C. Niemi (September 6, 2012)(06685-6688).

to a lower or fractional RSC.<sup>183</sup> EPA Region 10 has urged Northwest states to consider EPA action on water quality standards for other states.<sup>184</sup> EPA Region 10 has further endorsed the Oregon approach as “the right outcome.”<sup>185</sup>

This endorsement is also set forth in a letter dated September 5, 2014, from EPA to the state of Idaho.<sup>186</sup> EPA submitted this letter to Idaho on the question of whether the state should include or partially include salmon in its consumption rate for developing human health criteria. The letter sets forth alternatives to inclusion of salmon by reducing the RSC. EPA states that an “acceptable approach to reducing the RSC is to fully include salmon consumption in the consumption rate.”<sup>187</sup> EPA also approved the Spokane Tribe of Indians human health criteria using a RSC of 1.0 where the tribe used a historical rate of consumption.<sup>188</sup>

There is significant difference between risk assessment in other programs such as the Safe Drinking Water Act and Superfund Cleanup Program.<sup>189</sup> The SDWA uses an RSC of 20% and 80% of exposure but does so in terms of goals, not water quality criteria.<sup>190</sup> The SDWA is using this range of RSC for establishing Maximum Contaminant Level Goals that are not by definition regulatory limits.<sup>191</sup> This is in contrast to criteria in approved water quality standards that must be enforced through TMDLs and end of the pipe limits in NPDES permits.

In this instance EPA failed to follow its own handbook for developing water quality criteria and address risk in the proposed standards only in terms of surface water exposure through drinking water and fish consumption. Where EPA is including all fish in its proposed consumption rate, there is no basis for using an RSC value of less than 1.0.

EPA acknowledged in its final rule that the RSC values in its proposed rule effectively double counted the fish consumption by using a RSC values less than 1.0. Instead of correcting this error, EPA improperly cited entirely new data and previously undisclosed analysis to adjust the RSC values in its final rule.

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<sup>183</sup> Oregon DEQ, Oregon Human Health Criteria Issue Paper Toxics Rulemaking at 9 (00484). Oregon used RSC values recommended by EPA for 15 of 17 chemicals and a RSC value of 1.0 for all other non-carcinogens.

<sup>184</sup> L. Macchio, Letter to D. Essig (September 5, 2014)(04242-4244)

<sup>185</sup> See n.51. C. Niemi, Handwritten Notes. (“Dennis thinks the Oregon outcome is the right outcome.”)

<sup>186</sup> See n.184.

<sup>187</sup> *Id.* at 2.

<sup>188</sup> See EPA, Letter approving Spokane Tribe of Indians Water Quality Standards.

<sup>189</sup> See n.5. Ecology, Overview at 22.

<sup>190</sup> *Id.*

<sup>191</sup> *Id.*; See also Ecology, Draft Comments from Washington and Idaho on EPA 2013 FAQ (April 17, 2013)(04245-4256).

**M. The PCB Criteria Adopted by the EPA are Not Based on Substantial Evidence and are Arbitrary and Capricious**

EPA failed in its final rule to explain how it has resolved technical issues associated with deriving human health water quality criteria for PCBs and how EPA reconciles the technical difficulties that it has acknowledged in revising PCB standards under the Toxics Substance Control Act (“TSCA”). EPA also failed to justify overly stringent water quality criteria for PCBs while simultaneously authorizing ongoing PCB generation and release to the environment under its TSCA rules and through tribal and federal hatchery operations in the state of Washington.

On June 29, 2015, EPA issued a final update to its CWA section 304(a) criteria for the protection of public health. PCBs were among the chemicals that EPA did not update due to “outstanding technical issues.”<sup>192</sup> The scope of these technical issues is described in statements by EPA justifying its failure to revise the TSCA PCB regulations. Dennis McLerran, in a letter addressed to the Spokane River Regional Toxics Task Force through the Department of Ecology, wrote:

Revising current regulations to reduce inadvertently generated PCBs presents both policy and scientific challenges. Before proposing more stringent regulations on the inadvertent generation of PCBs in pigments, the EPA would seek to further understand the complexities and contributions of not only pigments, but also other congeners that be present [in receiving water]....

...The aggregation of PCB congeners may in some instances be problematic for risk assessment because the toxicity of different PCB congeners varies and a fixed water quality concentration for total PCBs may not adequately represent the variable toxicity of the various congeners actually present in a particular water body. While the EPA is not proposing to undertake a comprehensive analysis of the remaining PCB congeners, we are examining the characterization of PCBs in water bodies. As stated above, characterizing all of the PCBs in the EPA recommended water quality criteria for PCBs (i.e., expressed as total PCBs) is one topic we are discussing.<sup>193</sup>

If EPA does not have the ability for the reasons set forth in the above letter to revise PCB regulations under TSCA, it does not have the ability to revise the PCB NTR criteria applicable to Washington. EPA affirmed as recently as August 3, 2015, that revising PCB regulations “presents both policy and scientific challenges.”<sup>194</sup>

EPA should withdraw the final PCB criteria as the uncertainties described above have not been addressed or resolved in the final rule. It is entirely arbitrary and capricious for the agency to conclude on several occasions that it does not have a substantial basis for revising PCB water

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<sup>192</sup> See n.129. EPA, Human Health Ambient Water Quality Criteria: Draft 2014 Update at 2.

<sup>193</sup> D. McLerran, Letter to A. Borgias (February 24, 2015)(04239-04240).

<sup>194</sup> L. Mann, Email to M. Macintyre at 2 (August 3, 2015)(05063-5065).

quality criteria and then propose revised criteria for Washington that will be potentially devastating to Washington industries, local governments and continued hatchery operations.

EPA cannot justify the final criteria in light of the ongoing release of PCBs into the environment through its TSCA regulations. The TSCA regulations allow PCB concentrations up to 50 ppm in manufactured products. 40 C.F.R. §§ 761.3 and 761.20. This amounts to the equivalent of 50 million pg/L allowed under TSCA compared to the EPA proposed PCB water quality criteria in Washington at 7.3 pg/L. EPA has offered no explanation as to why it is now “necessary” to impose water quality criteria that are seven orders of magnitude more stringent than the PCB concentrations it has found not to threaten human health or the environment under TSCA, 40 C.F.R. § 761.20.<sup>195</sup>

EPA established PCB criteria that will be impossible to meet in many circumstances due to the ongoing release of PCBs that EPA authorizes as adequately protective under TSCA. A recent study in Washington documented the ubiquitous presence of low PCB levels in manufactured products including paints, used motor oil, road striping, dust suppressants, antifreeze, hydro-seed materials, packaging, toothpaste, hand soap, laundry soap and shampoo.<sup>196</sup>

#### **N. The proposed Methylmercury Criterion is Arbitrary and Capricious and Not Supported by Substantial Evidence**

EPA should have deferred action on a methylmercury criterion (MeHg) for the state of Washington. EPA adopted a fish tissue concentration criterion of 0.033 mg/kg (wet weight). This value is derived from the outdated basis for the EPA 2001 recommended criteria for methylmercury.<sup>197</sup> EPA acknowledged unresolved technical issues and delayed action on updating this value in the 2015 recommended updated human health water quality criteria.<sup>198</sup> EPA failed to acknowledge the technical problems with the 2001 recommendation and defer any action on adopting this criterion as applicable to Washington.

Washington already has in place criteria for mercury based on human health protection that are more stringent than the NTR criteria.<sup>199</sup> The NTR criteria are 0.14 µg/L (organisms and water) and 0.15 µg/L (organisms only), 40 C.F.R. § 131.36(b), compared to the Washington chronic freshwater criterion of 0.012 µg/L, WAC 173-201A-240, Table 240(3). There is no justification for EPA to impose a flawed criterion on the state of Washington when there is already in place a human health based criterion that is fully protective of human health.

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<sup>195</sup> See n.1. NTR at 60848-01, 60868.

<sup>196</sup> City of Spokane, PCBs in Municipal Products (Rev.), Table B-1 (July 21, 2015)(06694-6738).

<sup>197</sup> See n.5. Ecology, Overview at 50 (00056).

<sup>198</sup> See n.128. EPA, Final Updated Ambient Water Quality Criteria for the Protection of Public Health and *see* n.84. EPA, Human Health Ambient Water Quality Criteria: Draft 2014 Update.

<sup>199</sup> See n.5. Ecology, Overview at 49 (00055).

Ecology has previously identified to EPA the numerous technical difficulties it will have in implementing the EPA tissue based criterion.<sup>200</sup> These include unresolved technical issues regarding:

- Mixing zones
- Variances
- Field sampling recommendations
- Assessing non-attainment of fish tissue criteria
- Developing TMDLs for water bodies impaired by mercury
- Incorporating methylmercury limits into NPDES permits.<sup>201</sup>

Ecology has explained to EPA that the EPA guidance on implementing the 2001 criterion does not address these outstanding issues.<sup>202</sup> EPA has not responded to these concerns or explained in the final rule how the state and regulated community in Washington can feasibly implement the proposed methylmercury criteria. EPA should accordingly withdraw the MeHg criterion and take no further action on establishing a MeHg criterion for Washington until the recognized technical issues with the outdated 2001 criterion are resolved.

Additionally, even if the 2001 national criterion was still valid, EPA's proposed MeHg fish tissue criterion of 0.033 mg/kg (wet weight) is not. It is overly conservative and unattainable in Washington (and the rest of the United States) as the levels of mercury in fish are consistently higher than the proposed criterion.

EPA derived the proposed criterion following the methodology used to develop the national criterion but changed two key variables in the exposure assumptions: (1) the body weight from 70 kg to 80 kg; and (2) the fish consumption rate of 17.5 g/day to 175 g/day. EPA's FCR of 175 g/day is not defensible and results in overly stringent criteria not only for MeHg, but for PCBs and other pollutants. EPA offers no information or evidence that the nationally-recommended MeHg fish tissue criterion of 0.3 mg/kg would *not be* protective of residents in Washington, even tribal groups with relatively high fish consumption rates, assuming the issues previously discussed can be and are resolved. This is not surprising as there is no support in the technical literature that human health would be adversely affected if residents consumed fish having an average MeHg concentration of 0.3 mg/kg. There likewise can be no scientific evidence supporting the assumption that consuming fish—even at moderate to high ingestion rates—with tissue concentrations exceeding 0.033 mg/kg causes, or is likely to cause, adverse health effects.

There also is controversy surrounding the reference dose for MeHg (0.1 µg/kg/day) used in deriving the national and Washington criterion. The National Academy of Science selected

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<sup>200</sup> See n.5. Ecology Overview at 50

<sup>201</sup> See n.5. Ecology Overview.

<sup>202</sup> *Id.*

this value based on a Faroes Island study.<sup>203</sup> Island residents consumed both fish and pilot whales, and subtle effects were observed in some children. In addition to mercury, the pilot whales contained elevated levels of PCBs and other chlorinated, recalcitrant pollutants. These confounders were not appropriately considered in establishing the mercury reference dose. The most comprehensive study on potential health effects of mercury in children is the Seychelles Island study.<sup>204</sup> In that study, women of childbearing age consumed fish having mercury levels higher than most fish species in the United States and there was no evidence of developmental or neurological adverse effects in the children studied from birth to age five.

Significantly, the MeHg fish tissue criterion is well below observed concentrations of mercury in several fish species collected in Washington waters as documented in various studies.<sup>205</sup> For example, the median concentration of mercury in 97 fish samples collected and analyzed in 2004 and 2005 was 0.154 mg/kg (wet weight), five times the proposed MeHg criterion. A study conducted by USGS in Franklin D. Roosevelt Lake and the upper Columbia River basin reported the mean and minimum mercury concentrations in walleye, smallmouth bass, and rainbow trout, all of which were four to five times higher than EPA's proposed criterion.<sup>206</sup> The walleye mean and minimum fillet concentration was 0.33 mg/kg and 0.11 mg/kg, respectively; the smallmouth bass mean and minimum fillet concentration was 0.28 mg/kg and 0.17 mg/kg, respectively; and the rainbow trout mean and minimum fillet concentration was 0.20 mg/kg and 0.16 mg/kg, respectively. From a national perspective, for predator (game fish) species for all states combined, the median mercury concentration was 0.285 mg/kg. The 5<sup>th</sup> percentile concentration was 0.059 mg/kg.<sup>207</sup> Based on these data, adoption of the proposed criterion would lead to widespread and pervasive water quality impairment in Washington streams, rivers, and lakes. The economic impact would be staggering, while the human health benefit would likely be none.

Indeed, the final criterion could result in adverse health impacts if people reduce their consumption of fish because of this criterion. The health benefits of eating fish are well-documented relative to the potential risks of contaminants in the fish.

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<sup>203</sup> National Academy of Science, Toxicological effects of methylmercury. Committee on the Toxicological Effects of Methylmercury, Board on Environmental Studies and Toxicology, National Research Council. National Academy Press, (2000)(07570-7934).

<sup>204</sup> Davidson, et al., Effects of Prenatal and Postnatal Methylmercury Exposure from Fish Consumption on Neurodevelopment: Outcomes at 66 months of Age in the Seychelles Child Development Study. 280 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION 701-707 (1998)(07349-7355).

<sup>205</sup> Ecology, Washington State Toxics Monitoring Program: Contaminants in Fish Tissue from Freshwater Environments in 2004 and 2005 (2007)(Publication No. 07-03-024)(available at [www.ecy.wa.gov/biblio/0703024.html](http://www.ecy.wa.gov/biblio/0703024.html))(07356-7390).

<sup>206</sup> United States Geological Survey, Concentrations of Mercury and Other Trace Elements in Walleye, Smallmouth Bass, and Rainbow Trout in Franklin D. Roosevelt Lake and the Upper Columbia River, Washington, USGS Open-File Report 95-1951995 (1994)(available at <http://pubs.er.usgs.gov/publication/ofr95195>)(07391-7429); See also Munn and Short, Spatial Heterogeneity of Mercury Bioaccumulation by Walleye in Lake Roosevelt and the Upper Columbia River, Washington. 126 TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY 477-487 (1997)(07935-7946).

<sup>207</sup> EPA, The National Study of Chemical Residues in Lake Fish Tissue (2009)(EPA-823-R-09-006)(07430-7433).

For major health outcomes among adults, based on both the strength of the evidence and the potential magnitudes of effect, the benefits of fish intake exceed the potential risks. For women of childbearing age, the benefits of modest fish intake, excepting a few selected species, also outweigh risks.<sup>208</sup>

EPA failed to evaluate the voluminous information regarding the health benefits of consuming fish. The overly-conservative MeHg criterion value of 0.033 mg/kg is misleading to the public and implies that the potential risks of mercury in fish (even at such a low level) outweigh any health benefits. The health benefits are predictable and supported by numerous studies, whereas the adverse effects assumed by EPA are highly speculative and largely theoretical, assuming that they exist at all.

Finally, EPA also fails to discuss or consider the protective effect selenium has on potential mercury health effects although many toxicologists have advocated that traditional risk assessments of mercury in fish without concomitant information on tissue selenium levels is scientifically flawed and misleading.<sup>209</sup> Recent reports have explained the mechanisms of this protective effect.<sup>210</sup> When the molecular? or molar? ratio of selenium to mercury in fish tissue exceeds 1.0 in freshwater and marine fish, a protective effect can be assumed.<sup>211</sup> EPA should evaluate the selenium/mercury molecular ratios in fish from Washington waters and use this information to assess the need for a human health MeHg fish tissue criterion 10 times more stringent than the nationally recommended MeHg criterion.

**O. EPA has improperly used Bioaccumulation Factors rather than Bioconcentration Factors in deriving the proposed criteria**

As part of the process of updating the national human health water quality criteria in 2014, EPA proposed to alter its prior convention of using BCFs to represent bioaccumulation in the criteria derivation equation and instead used modeled BAFs calculated via the EPI Suite software package. In finalizing the human health criteria guidance in 2015, EPA apparently departed from strict reliance on the EPI Suite model and chose to select a value representing bioaccumulation (a BAF or BCF) for each substance using a decision tree published in a 2003 technical document (i.e., Figure 3-1 from EPA-822-R-03-030, December 2003). That decision-tree and information in the chemical-specific criteria support documents suggest that EPA selected BAFs or BCFs for criteria derivation from either measured or predicted BAFs or BCFs from laboratory or field studies.

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<sup>208</sup> Mozaffarian and Rimm, Fish Intake, Contaminants, and Human Health: Evaluating the Risks and the Benefits, 296 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION 1885 at 1885 (2006)(07434-7449).

<sup>209</sup> Zhang, Chan and Larssen, New Insights into Traditional Health Risk Assessments of Mercury Exposure: Implications for Selenium, 48 ENVIRONMENTAL SCIENCE & TECHNOLOGY 1206 (2014)(07947-7953).

<sup>210</sup> Ralston and Raymond, Dietary Selenium's Protective Effects Against Methylmercury Toxicity, 278 TOXICOLOGY 112 (2010)(07954-7959).

<sup>211</sup> Peterson, et al., How Might Selenium Moderate the Toxic Effects of Mercury in Stream Fish of the Western U.S., 43 ENVIRONMENTAL SCIENCE & TECHNOLOGY 3919 (2009)(07450-7467).



A considerable body of science exists concerning the accumulation of substances in fish tissue and the choice of a BAF or BCF can have a large influence on the calculated criteria value. Moreover, it is widely recognized that BAFs and BCFs are influenced by several local environmental factors (e.g., food web structure, water temperature, dissolved carbon). Therefore, it is important to understand the basis for EPA's selection of a specific BCF or BAF so that states, the public, and the regulated community may consider the appropriateness of the choice for a particular situation and allow states to modify the national BCF or BAF such that it better represents state-specific conditions.

Unfortunately, the technical documentation issued with EPA's updated 2015 criteria is wholly insufficient to allow technical comment on EPA's selection of BAFs or BCFs, and whether those are appropriate for Washington. This is because EPA has not provided sufficient detail about the origin of the BAF or BCF data upon which the selected value is based nor has EPA provided the specific procedures and choices the agency used to derive the BAF or BCF that was ultimately selected for criteria derivation. This lack of transparency in describing the origin of the BAFs and BCFs violates the APA because it effectively prohibits substantive comment on the technical merits of EPA's choice of a national value and on the appropriateness of that value in specific states or water bodies, such as those EPA is proposing for Washington.

EPA has failed to provide adequate information that clearly identifies the specific procedures used to select each BAF or BCF value and present the data in a manner such that interested and affected parties can reproduce and evaluate EPA's calculations. Absent such information, EPA should withdraw the final rule relying on BAF values.

**P. EPA's Economic Impact Analysis Fails to Include an Adequate Assessment of Compliance with the Final PCB Criteria**

EPA has erroneously excluded the incremental cost of compliance with its proposed PCB criteria in both the draft and final economic impact analysis. Available data indicates that large portions of state waters will be considered impaired under CWA section 303(d) for failing to meet the proposed PCB criteria. Ecology has also concluded that essentially every publicly owned wastewater treatment plant in Washington has the potential to cause or contribute to a violation of the PCB criteria and that the facilities will require tertiary membrane filtration treatment to address PCBs. The technology to treat for PCBs in a five Million Gallon a Day (MGD) facility would be membrane filtration followed by reverse osmosis, with a Net Present Value (2013 dollars) cost of \$75 to \$175 million as documented in Attachment C—HDR, Treatment Technology Review and Assessment for Association of Washington Business, Association of Washington Cities and Washington State Association of Counties, at 38, Table 9 (December 2013).

The draft economic impact analysis did not address PCBs on the pretext that there is no water column data in Washington indicating ambient PCB concentrations below the NTR but above the proposed PCB criteria. In section 4.1.2 in the draft economic impact analysis EPA represents that it evaluated discharge monitoring and permit application data and "ambient pollutant concentrations from the Environmental Information Management (EIM) database." In section 5.1 of the draft analysis EPA represents that it evaluated "potential incremental impairment" based on available EIM data. EPA purports in footnote 17 of the document to

exclude all “U” data for non-detected results or results that could not be used but “kept” “J” data where an analyte is positively identified and the reported result is an estimate.

It is inexplicable, given these parameters, how EPA represented in Exhibit 5-1 in the draft economic impact analysis that there is no PCB water column in the EIM database that is either unqualified or J qualified. In fact, there is substantial PCB water column data for Puget Sound and the major tributaries to Puget Sound. This data was collected by or for Ecology relatively recently in 2009 and 2010.<sup>212</sup> This report has been reviewed and that data in the report has been included in the EIM database.<sup>213</sup> From this report alone there are well over 12,000 PCB sampling results from Haro Strait, the Strait of Juan de Fuca, the Whidbey Basin, Main Basin, South Sound and Hood Canal.<sup>214</sup> This includes PCB water column data for total congeners collected at each of these sites.<sup>215</sup> All of the total congener data is either unqualified or J qualified. This data should have been identified and listed in Exhibit 5-1 in the economic impact analysis.

EPA failed to adequately acknowledge in the final rule that all of the total PCB water column data from the 2011 Ecology report is above the PCB criteria proposed for Washington but below the NTR criteria. See Table 1, *supra*, at XX. Without citing this data the final economic analysis estimates that there would be at least 25 additional water body segments listed as impaired for PCBs in Washington.<sup>216</sup> EPA failed to consider, however, available data documenting that dischargers are potentially going to cause or contribute to a violation of its proposed PCB criteria. EPA appears to have conveniently placed blinders on its review by relying on discharge monitoring data knowing that such data, if collected, is based on an EPA test method with detection levels that are above even the NTR criteria. In doing so EPA ignored data from Ecology on wastewater treatment plants that document levels of PCB concentrations that are well above the proposed PCB criteria. In fact, every wastewater treatment plant sampled by Ecology (which includes two of the specific facilities evaluated by EPA in the economic impact analysis), with the exception of two facilities with reporting levels of 600 pg/L, were well above the proposed criteria.<sup>217</sup> See Table 2, *supra* at XX.

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<sup>212</sup> Ecology, Control of Toxic Chemicals in Puget Sound: Characterization of Toxic Chemicals in Puget Sound and Major Tributaries, 2009-10 (January 2011)(05155-5395) (available at <https://fortress.wa.gov/ecy/publications/documents/1103008.pdf>).

<sup>213</sup> Ecology, Screen-shot of EIM Search Result (December 8, 2015)(available at [https://fortress.wa.gov/ecy/eimreporting/Eim/EIMSearchResults.aspx?ResultType=EIMTabs&StudyName=toxic+chemicals+in+puget+sound&StudyNameSearchType=Contains \(06753\)](https://fortress.wa.gov/ecy/eimreporting/Eim/EIMSearchResults.aspx?ResultType=EIMTabs&StudyName=toxic+chemicals+in+puget+sound&StudyNameSearchType=Contains (06753))).

<sup>214</sup> Ecology, Email (07311) and attached EIM Data for Puget Sound (December 8, 2015)(05987). The attached data is limited to water column data for total PCBs. The entire data set will be submitted separately.

<sup>215</sup> *Id.*

<sup>216</sup> EPA, Economic Analysis for Water Quality Standards Applicable to the State of Washington (Oct. 21, 2016).

<sup>217</sup> Ecology, Control of Toxic Chemicals in Puget Sound Summary Technical Report for Phase 3: Loadings from POTW Discharge of Treated Wastewater, Figure 2 (December 2010)(Publication No. 10-10-057)(05746-5986).

The failure of EPA to consider this data is inexcusable where EPA has relied on this information to perform a narrative reasonable potential analysis for three municipalities on the Spokane River.<sup>218</sup>

The economic impact analysis for PCBs should have also considered stormwater. EPA excluded stormwater from the analysis by failing to identify PCB data in Table 5-1. PCB concentrations are present in stormwater monitoring in the City of Spokane and Western Washington.<sup>219</sup> The median concentration for PCBs in Western Washington stormwater is 0.011 µg/L. The analysis should include some assessment of the economic impact of managing stormwater discharges.

EPA should have also addressed the economic impact of proposed PCB criteria on the continued operations of tribal and federal fish hatcheries. EPA should have explained how it intends to regulate hatcheries that discharge to and release salmon in Puget Sound, Hood Canal, Haro Strait and the Strait of Juan de Fuca. EPA provided no explanation as to how hatcheries can be allowed to continue operations knowing that they are a significant source of PCBs in waters that will be considered impaired for PCBs under the final criteria. EPA is the NPDES permit authority for these facilities and should have fully accounted for the economic impact of its final criteria on their continued operations.

The economic impact analysis should also include an assessment of the impact from potential section 303(d) PCB listings based on fish tissue. The economic impact analysis acknowledges that fish tissue data can be a basis for listing under the Ecology Policy 1-11. EPA offers no explanation as to why it failed to consider PCB fish tissue data that is available in the EIM database. This is particularly relevant as Washington is the only state in EPA Region 10 to use fish tissue data as a basis for 303(d) listings. EPA Region 10 has been adamant with the Ecology that it not revise this policy to remove consideration of fish tissue.<sup>220</sup>

EPA should withdraw the final rule based on the inadequate economic impact analysis and provided additional opportunity for public comment on the revised economic impact analysis.

**Q. The Final Rule Constitutes a Significant Regulatory Action under Executive Order 12866 “Regulatory Planning and Review” and Executive Order 13563 “Improving Regulation and Regulatory Review”**

Executive Order 12866 “Regulatory Planning and Review” provides that significant regulatory actions must be submitted for review to the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget (OMB). E.O. 12866, 58 Fed. Reg. 51,735 (October 4, 1993). A “significant regulatory action” is any regulatory action that “will

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<sup>218</sup> EPA, City of Coeur d’Alene Revised Fact Sheet NPDES Permit No. ID0022853 at 17 (2013)(07468-7569).

<sup>219</sup> W. Hobbs, Memorandum Spokane Stormwater (October 15, 2015)(06427-6435); Ecology, Western Washington NPDES Phase I Stormwater Permit: Final S8.D Data Characterization 2009-2013 (February 2015)(Ecology Publication No. 15-03-001)(05592-7745);King County, PCB/PBDE Loading Estimates for the Greater Lake Washington Watershed (September 2013)(06546-6617).

<sup>220</sup> K. Susewind, Email to D. Opalski (March 17, 2014)(04740-4742).

likely result in a rule that may: (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive order." E.O. 12866 § 3(f).

As EPA notes in its Guidelines for Preparing Economic Analyses (December 17, 2010), any one of the four criteria listed can trigger a proposed regulatory action to be defined as "significant," while those meeting the first criteria are generally defined as "economically significant." EPA Guidelines for Preparing Economic Analyses § 2.1.1. The agency makes the initial determination of what regulatory actions may be significant, but OIRA, not the agency, makes the final determination of which rules are considered to be significant. E.O. 12866 § 6(a)(3)(A). For each matter identified as a significant regulatory action the issuing agency must provide to OIRA a draft of the proposed regulatory action, along with an explanation of the need for the proposed action and how the action will meet that need, and an assessment of the potential costs and benefits of the action. E.O. 12866 § 6(a)(3)(B).<sup>221</sup>

The principles set out in E.O. 12866 were supplemented and reaffirmed in Executive Order 13563 "Improving Regulation and Regulatory Review" E.O. 13563 76 Fed. Reg. 3821 (January 21, 2011). E.O. 13563 emphasizes that in complying with E.O. 12866 agencies must use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible (§ 1(c)), and that regulations should be adopted through a transparent process involving public participation (§ 2). Each agency is to ensure "the objectivity of any scientific and technological information and processes used to support the agency's regulatory actions." E.O. 13563 § 5.<sup>222</sup>

Here, EPA determined that neither its proposed nor final rules were a "significant regulatory action" under E.O. 12866 and were "therefore, not subject to review under Executive Orders 12866 and 13563." 80 Fed. Reg. 55,073 § VI.A; 81 Fed. Reg. 85,417, 92,466 § V.A. The sole basis given by EPA for this determination was the statement that "the proposed rule does not

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<sup>221</sup> For actions that fall into the § 3(f)(1) category of *economically* significant regulatory actions, issuing agencies must go further and provide OIRA with (i) an assessment, including the underlying analysis, of benefits anticipated from the regulatory action together with, to the extent feasible, a quantification of those benefits; (ii) an assessment, including the underlying analysis, of costs anticipated from the regulatory action together with, to the extent feasible, a quantification of those costs, and (iii) an assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, and an explanation why the planned regulatory action is preferable to the identified potential alternatives. E.O. 12866 § 6(a)(3)(C).

<sup>222</sup> Both E.O. 13563 and subsequent E.O. 13579 set forth procedures by which agencies engage in retrospective analyses of existing regulations. E.O. 13563 § 6 (05988-90); E.O. 13579, 76 Fed. Reg. 41,587 (July 11, 2011) (06363-6366). Executive Order 13610 "Identifying and Reducing Regulatory Burdens" sets out additional requirements, including public participation, for regular retrospective review efforts by OIRA. E.O. 13610, 77 Fed. Reg. 28469 (May 10, 2012) (06351-6354).

establish any requirements directly applicable to regulated entities or other sources of toxic pollutants.” *Id.*

EPA should withdraw the rule on the basis that it was not properly considered a significant regulatory action based on the rule’s economic impacts. EPA’s focus on the “directly applicable” costs of the Rule is inconsistent with E.O. 12866. E.O. 12866 contains no requirement that regulatory action be imposed directly on a regulated entity in order to be considered a significant regulatory action. To the contrary, the entire approach of E.O. 12866 is to assess the totality of the costs and benefits of significant rules on society and the economy as a whole. This is evident in E.O. 12866’s directive that agencies “assess *all* costs and benefits of available regulatory alternatives, including the alternative of not regulating.” (Emphasis added).

EPA’s determination is also inconsistent with characterization of rules adopting water quality criteria for other states. In December 2016 EPA described as “significant regulatory action” its rule adopting water quality standards for certain waters under the state of Maine’s jurisdiction. 81 Fed. Reg. 92,466, 92,486. EPA’s standards for these waters involve fewer criteria, lower estimated compliance costs, and fewer affected facilities than Washington’s rule. The discrepancy in treatment suggests that rather than actually assessing whether the rule falls within the definition of “significant regulatory action,” EPA decided at the outset that it did not want to categorize the proposed rule as a significant regulatory action, presumably in order to avoid the full economic analyses by OIRA required by E.O. 12866.

Moreover, EPA’s characterization of the rule as not establishing “directly applicable” requirements is misleading. There is nothing permissive about a state’s obligation under the CWA to ensure its NPDES permits include limitations on discharges necessary to comply with the standards in the final rule. *See, e.g.*, 81 Fed. Reg. 85,417, 85,434 §V.C. EPA acknowledges that NPDES-permitted facilities for which the revised human health criteria are more stringent than applicable aquatic life criteria face new compliance costs. *Id.* at § VI. Far from speculative, EPA identified a subset of point source facilities for which it could reasonably estimate the costs of complying with the final rule. 81 Fed. Reg. 85,417, 85,433 §IV.A. Moreover, Ecology has notified some permittees that it intends to translate the rule’s criteria into enforceable NPDES permit limits.

The rule does constitute an economically significant regulatory action requiring economic analyses by OIRA. A cost analysis prepared in 2013 by HDR Engineering estimated the cost of compliance by regulated industries and local governments with Oregon’s water quality standards that are consistent with the EPA Final Rule in a range of \$5 billion dollars to \$11 billion dollars for just the 73 “major” NPDES permits out of 409 NPDES permits administered by Ecology. This does include the 18 general permits administered by Ecology or federal individual and general NPDES permits administered by EPA in Washington.<sup>223</sup> Compliance costs would be borne not only by local governments and industries, but would also apply to federal, state, Tribal and other private fish hatchery programs in Washington. Ecology has identified returning salmon

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<sup>223</sup> HDR, Treatment Technology Review and Assessment, Association of Washington Business Association of Washington Cities, Washington State Association of Counties (December 14, 2013). Attachment C.

as contributing up to 10% of the PCB loadings associated with hatcheries.<sup>224</sup> In 2006 Ecology published a report documenting the PCB loadings associated with hatcheries.<sup>225</sup> As illustrated by Ecology's section 401 certification for the Leavenworth Federal Fish Hatchery, this is a statewide problem.<sup>226</sup> EPA's rule could very well have the unintended consequence of shutting down these very fish hatcheries.

The "economic analysis" that EPA had prepared by Abt Associates "in the spirit" of E.O. 12866 is no substitute for the full economic analyses required by OIRA.<sup>227</sup> As but one example, E.O. 12866 requires a cost benefit analysis of feasible alternatives to a proposed rule—such as the water quality standards proposed by Ecology—and an explanation of why EPA's rule is preferable to the identified potential alternative. E.O. 12866 § 6(a)(3)(C). The consideration of alternative approaches is in fact one of the key elements of the E.O. 12866 economic analysis. *See* OMB Circular A-4 (September 17, 2003) at 2, 7-9.<sup>228</sup> The analysis "should study alternative levels of stringency to understand more fully the relationship between stringency and the size and distribution of benefits and costs among different groups." *Id.* at 8. At least one of the alternatives should be a less stringent alternative to the agency's preferred option.<sup>229</sup> The agency must also consider the option of deferring to regulation at the State or local level and assess whether federal regulation is the best solution. *Id.* at 6. Finally, the agency should conduct both a benefit-cost analysis and cost-effectiveness analysis. The Abt Associates "economic analysis" does not examine any alternatives to EPA's rule. It does not include any consideration of the alternative of leaving it to Ecology to develop appropriate human health criteria. Nor does it involve either benefit-cost or cost-effectiveness analyses.

In addition to economic costs, the rule should have been identified as significant based on its novel legal and policy issues. A "significant regulatory action" includes any regulatory action that raises "novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive order." E.O. 12866 § 3(f). As explained above, EPA's derivation of human health criteria for Washington is based on novel legal interpretations of treaty rights that are unsupported by case or statutory law. Moreover, the Rule raises novel policy issues insofar as EPA's methods for deriving the criteria are inconsistent with EPA policy.

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<sup>224</sup> Ecology, Control of Toxic Chemicals in Puget Sound, Assessment of Selected Toxic Chemicals in the Puget Sound Basin, 2007-2011.

<sup>225</sup> Ecology, Persistent Organic Pollutants in Feed and Rainbow Trout from Selected Trout Hatcheries (April 2006) (Ecology Pub. No. 06-03-017) (04681-4732).

<sup>226</sup> Ecology, Final 401 Certification for the Leavenworth National Fish Hatchery, Order No. 7192 (January 7, 2010) (04669).

<sup>227</sup> Abt Associates, Economic Analysis for the Revision of Certain Federal Water Quality Criteria Applicable to Washington (August 17, 2015).

<sup>228</sup> OMB Circular A-4 sets out OMB's guidance to agencies on the development of regulatory analysis required by E.O. 12866 § 6(a)(3)(c) (2013) (04983-5030). *See also* OIRA, Regulatory Impact Analysis: Frequently Asked Questions (FAQs) (February 7, 2011) (05031-5042); OIRA, Regulatory Impact Analysis: A Primer (05139-5154).

<sup>229</sup> *Id.* OIRA, Regulatory Impact Analysis: A Primer at 7; OIRA, Regulatory Impact Analysis: Frequently Asked Questions (FAQs) at 3.

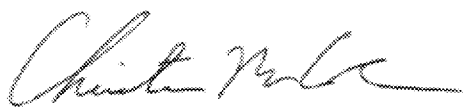
Based on the novel legal and policy issues involved, EPA should have notified OIRA and OMB that this rule involved a potentially significant regulatory action.

EPA should repeal or withdraw the EPA Final Rule based on the failure of the agency to comply with E.O. 12866 and 13563.

#### IV. CONCLUSION

For the reasons described above, Petitioners request that EPA reconsider the State of Washington's Human Health Water Quality Standards and Implementation Tools, submitted to EPA on August 1, 2016; and repeal or withdraw the Final Rule Revision of Certain Federal Water Quality Standards Applicable to Washington, 81 Fed. Reg. 85,417 (Nov. 28, 2016).

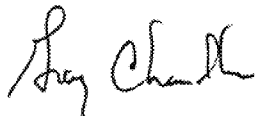
Dated this 21st day of February, 2017.



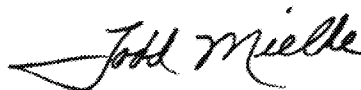
Christian McCabe  
Executive Director  
Northwest Pulp & Paper Association



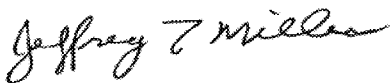
Jerry Schwartz  
Senior Director  
Energy and Environmental Policy  
American Forest & Paper Association



Gary Chandler  
Vice President of Government Affairs  
Association of Washington Business



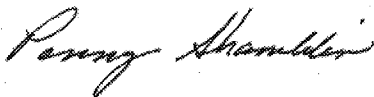
Todd Mielke  
Chief Executive Officer  
Greater Spokane Incorporated



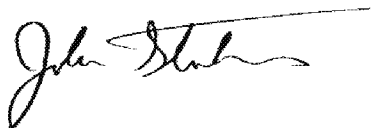
Jeffrey T. Miller  
President & Executive Director  
Treated Wood Council



Dallin Brooks  
Executive Director  
Western Wood Preservers Institute



Penny Shamblin  
Counsel for  
Utility Water Act Group



John Stuhlmiller  
Chief Executive Officer  
Washington Farm Bureau

Message

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**From:** Gildersleeve, Melissa (ECY) [MGIL461@ECY.WA.GOV]  
**Sent:** 2/22/2017 4:24:06 PM  
**To:** Szlag, Matthew [Szlag.Matthew@epa.gov]  
**Subject:** RE: WA toxic criteria petition

Thanks--

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**From:** Szlag, Matthew [mailto:Szlag.Matthew@epa.gov]  
**Sent:** Tuesday, February 21, 2017 5:09 PM  
**To:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Hi Melissa,

Thanks, same here. We've seen the press release but haven't been able to track down the actual petition yet. I'll share it with you when we receive it.

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Matthew Szlag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szlag.matthew@epa.gov](mailto:szlag.matthew@epa.gov)

---

**From:** Gildersleeve, Melissa (ECY) [mailto:MGIL461@ECY.WA.GOV]  
**Sent:** Tuesday, February 21, 2017 4:02 PM  
**To:** Szlag, Matthew <Szlag.Matthew@epa.gov>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA toxic criteria petition

Thanks-- hey did you get an actual copy of the AWB petition? We saw the press release but have not seen the actual petition they sent you---Attaching press release in case it did not make it to AK--

FOR IMMEDIATE RELEASE: February 21, 2017

## **EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

*Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable*

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.



“We are all committed to clean water,” said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today’s action. “Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders’ input. The existing EPA rule fails on all these grounds.”

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

“From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable,” McCabe said. “We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance.”

“We were extremely disappointed when EPA’s rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state’s own rule offers a more realistic and feasible approach to water quality.”

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. “The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone’s efforts to improve environmental and health outcomes for Washington residents,” she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA’s new standards. This could put facility operations in jeopardy and dampen employers’ ability to create new jobs, as well as to retain existing ones. “This is an issue that touches every person in every community in Washington state,” said Kris Johnson, President and CEO of the Association of Washington Business. “In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them.”

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

“Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members,” said Washington Farm Bureau CEO John Stuhlmiller. “But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology’s challenging but achievable standards will deliver something that can work for the state.”

“We look forward to working with the state Department of Ecology to replace the EPA’s unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state,” Stuhlmiller concluded.

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**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]

**Sent:** Tuesday, February 21, 2017 4:21 PM

**To:** Gildersleeve, Melissa (ECY) <[MGIL461@ECY.WA.GOV](mailto:MGIL461@ECY.WA.GOV)>; Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>; Brown, Chad (ECY) <[CHBR461@ECY.WA.GOV](mailto:CHBR461@ECY.WA.GOV)>

**Cc:** Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>; Guzzo, Lindsay <[Guzzo.Lindsay@epa.gov](mailto:Guzzo.Lindsay@epa.gov)>

**Subject:** WA toxic criteria petition

FYI – We received this today from NWEA.

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Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

Message

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**From:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**Sent:** 2/22/2017 2:59:40 PM  
**To:** Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** FW: FOR IMMEDIATE RELEASE - Employer Groups Petition EPA to Reconsider Water Rule

FYI news....

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Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
cheryl.niemi@ecy.wa.gov

Note: This e-mail may be subject to public disclosure.

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**From:** Gildersleeve, Melissa (ECY)  
**Sent:** Tuesday, February 21, 2017 4:19 PM  
**To:** Key, Ellie (ECY) <EKEY461@ECY.WA.GOV>; Bilhimer, Dustin (ECY) <DBIL461@ECY.WA.GOV>; Braley, Susan (ECY) <SUBR461@ECY.WA.GOV>; Bresler, Helen (ECY) <HBRE461@ECY.WA.GOV>; Brown, Chad (ECY) <CHBR461@ECY.WA.GOV>; Holbrook, Chanele (ECY) <chho461@ECY.WA.GOV>; Conklin, Becca (ECY) <bcon461@ECY.WA.GOV>; Cummings, Ron (ECY) <rcum461@ECY.WA.GOV>; Dent, Diane (ECY) <dten461@ECY.WA.GOV>; Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>; Henderson, Lara (ECY) <lboy461@ECY.WA.GOV>; Hicks, Mark (ECY) <mhic461@ECY.WA.GOV>; Kleinknecht, Jake (ECY) <jkle461@ECY.WA.GOV>; Lizon, Patrick (ECY) <pliz461@ECY.WA.GOV>; McBride, Ron (ECY) <rmcb461@ECY.WA.GOV>; Morgan, Laurie (ECY) <lmor461@ECY.WA.GOV>; Nelson, Blake (ECY) <bnel461@ECY.WA.GOV>; Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>; Rau, Ben (ECY) <benr461@ECY.WA.GOV>; Robertson, Jenny (ECY) <jenr461@ECY.WA.GOV>; Shaleen-Hansen, Mary (ECY) <maha461@ECY.WA.GOV>; Whiley, Tony (ECY) <TWHI461@ECY.WA.GOV>  
**Subject:** FOR IMMEDIATE RELEASE - Employer Groups Petition EPA to Reconsider Water Rule

**From:** Chris McCabe [mailto:chris@nwpulpandpaper.org]  
**Sent:** Tuesday, February 21, 2017 1:14 PM  
**To:** Chris McCabe <chris@nwpulpandpaper.org>  
**Subject:** FOR IMMEDIATE RELEASE - Employer Groups Petition EPA to Reconsider Water Rule

**For more information:**

Chris McCabe, NW Pulp & Paper Association, [chris@nwpulpandpaper.org](mailto:chris@nwpulpandpaper.org), 360.529.8638  
Jason Hagey, Association of Washington Business, [JasonH@awb.org](mailto:JasonH@awb.org), 360.943.1600  
Todd Mielke, Greater Spokane Incorporated, [tmielke@greaterspokane.org](mailto:tmielke@greaterspokane.org), 509.624-1393

FOR IMMEDIATE RELEASE: February 21, 2017

**EMPLOYER GROUPS PETITION EPA TO RECONSIDER WATER RULE**

*Despite Commitment to Clean Water, Trade Associations Declare  
EPA Rule Technologically and Economically Unattainable*

(OLYMPIA, Washington) – A group of employer trade associations today filed paperwork asking the U.S. Environmental Protection Agency (EPA) to reconsider new water quality standards it has imposed on Washington State and instead approve a more balanced rule developed by the Washington State Department of Ecology.

The petition submitted today argues that EPA unjustifiably usurped the state of Washington's authority to set water quality standards when it rejected the standard developed and proposed by the state agency.

The employer groups also argue that in developing its rule, EPA made decisions that were arbitrary and capricious, were changed without notice during the process, ignored both stakeholder input and readily available statistical data, and did not sufficiently analyze potential compliance costs and other economic impacts.

As a result, EPA's water standards cannot be met with existing or foreseeable technologies and may seriously endanger family-wage jobs at facilities across the state, the group says.

"We are all committed to clean water," said Todd Mielke, CEO of Greater Spokane Incorporated, one of the parties to today's action. "Cleaner water results from standards that are achievable; when standards are based on scientific reality rather than aspirational desires; when standards utilize affordable technology; and when they reflect all stakeholders' input. The existing EPA rule fails on all these grounds."

In addition to Greater Spokane Incorporated, other petitioners include the Association of Washington Business; Northwest Pulp & Paper Association; American Forest & Paper Association; Treated Wood Council; Western Wood Preservers Institute; Washington State Farm Bureau; and the Utility Water Act Group.

Chris McCabe, executive director of the Northwest Pulp & Paper Association, said that his group and other industry associations have tried to work with both state and federal regulators to develop these standards for more than four years.

"From day one, our goal has been to promote balanced water quality standards that will enhance our already strong environmental and human health protections, while being technically, scientifically and economically attainable," McCabe said. "We were involved at every step of the process, sharing reams of data and scientific analysis in hopes of the regulators striking this balance."

"We were extremely disappointed when EPA's rule ignored our efforts at constructive engagement and failed to incorporate any input from the regulated community. We believe that regulatory reconsideration is warranted and that the state's own rule offers a more realistic and feasible approach to water quality."

Donna Harman, president and CEO of the American Forest & Paper Association, said that, if allowed to stand, the EPA rule would put severe pressure on companies to invest in costly technologies without any confidence that those investments will result in compliance with the new standard or even any measurable improvement in water quality. "The EPA rule represents costly and ineffective regulatory overreach – plain and simple. It sets up a system for failure and permitting uncertainty that will detract from everyone's efforts to improve environmental and health outcomes for Washington residents," she said.

The petitioners noted that National Pollutant Discharge Elimination System (NPDES) permits for both existing and new facilities could be rejected if they fail to demonstrate an ability to comply with the EPA's new standards. This could put facility operations in jeopardy and dampen employers' ability to create new jobs, as well as to retain existing ones. "This is an issue that touches every person in every community in Washington state," said Kris Johnson, President and CEO of the Association of Washington Business. "In addition to the impact on local employers and the potential loss of family-wage jobs, local government costs for wastewater treatment will increase significantly without any clear evidence that higher bills for ratepayers will produce commensurate benefits for them."

The City of Bellingham, for instance, has estimated that monthly wastewater treatment bills for its citizens could jump from \$35 to \$200 to cover its costs of compliance with the new rule.

"Agriculture is the backbone of our state economy and water is the backbone of agriculture, so no one cares more about water quality than our members," said Washington Farm Bureau CEO John Stuhlmiller. "But we need water quality standards that are economically feasible and will actually produce results. This petition and a return to the Department of Ecology's challenging but achievable standards will deliver something that can work for the state."

"We look forward to working with the state Department of Ecology to replace the EPA's unworkable and counterproductive rule and implement the more balanced approach they had developed. Working together will better serve all the citizens of the state," Stuhlmiller concluded.

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Message

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**From:** Gildersleeve, Melissa (ECY) [MGIL461@ECY.WA.GOV]  
**Sent:** 12/27/2016 4:28:28 PM  
**To:** Szelag, Matthew [Szelag.Matthew@epa.gov]  
**Subject:** RE: WA Human Health Criteria

Cleaning out email and just saw this and realized I did not reply. Thanks for the message--really enjoy working with you and hope that you will still be around to work on some of our stuff---hope you enjoy the new change of pace in Alaska!

---

**From:** Szelag, Matthew [mailto:Szelag.Matthew@epa.gov]  
**Sent:** Wednesday, November 16, 2016 12:46 PM  
**To:** Gildersleeve, Melissa (ECY) <MGIL461@ECY.WA.GOV>; Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>; Brown, Chad (ECY) <CHBR461@ECY.WA.GOV>; Braley, Susan (ECY) <SUBR461@ECY.WA.GOV>; Conklin, Becca (ECY) <bcon461@ECY.WA.GOV>  
**Cc:** Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: WA Human Health Criteria

I just wanted to add a personal note thanking you for all your hard work over the years on this topic. Throughout the challenges, I appreciated working with all of you and learned a lot from your expertise. I know others at EPA also share those sentiments. I'm sure there is more yet to come on human health, but I also look forward to our continued work together on other water quality issues.

*Please note the new phone number and address below.*

---

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

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**From:** Opalski, Dan  
**Sent:** Tuesday, November 15, 2016 12:03 PM  
**To:** [ksus461@ecy.wa.gov](mailto:ksus461@ecy.wa.gov); Bartlett, Heather (ECY) <[heba461@ECY.WA.GOV](mailto:heba461@ECY.WA.GOV)>; [maib461@ecy.wa.gov](mailto:maib461@ecy.wa.gov); [mgil461@ECY.WA.GOV](mailto:mgil461@ECY.WA.GOV)  
**Cc:** McLerran, Dennis <[mclerran.dennis@epa.gov](mailto:mclerran.dennis@epa.gov)>; Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>  
**Subject:** WA Human Health Criteria

Dear Ecology Partners:

We appreciate Ecology's leadership, hard work and partnership on the important task of updating Washington's human health water quality criteria and implementation tools. The effort and thoughtful engagement by Ecology staff over the last several years has been nothing short of remarkable. Attached is EPA's final Clean Water Act decision on Ecology's August 1, 2016 submittal of new and revised water quality standards. I've also attached EPA's final federal rule, which Administrator McCarthy signed today. Both decision documents and the docket for the federal rule will be available on EPA's website by tomorrow morning. The website is: <https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington#fed>

As we've discussed recently, bringing resolution to Washington's human health criteria is a significant accomplishment that further establishes the state of Washington's leadership in water quality protection. We recognize that there is much more work to do to ensure that the standards can be implemented in a reasonable manner, and we are committed to working through those issues with Ecology over time.

Thank you again sincerely for the quality of the work and your partnership.

Dan Opalski  
Director  
Office of Water and Watersheds  
U.S. Environmental Protection Agency, Region 10  
1200 Sixth Avenue, Suite 900  
Seattle, WA 98101  
206-553-1855  
FAX: 206-553-1280

Message

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**From:** Szelag, Matthew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F1E48230D96943F8ACB72810E32CE8D6-SZELAG, MATTHEW]  
**Sent:** 3/27/2017 7:28:31 PM  
**To:** Inouye, Laura (ECY) [Lino461@ECY.WA.GOV]; Hoffman, Erika [Hoffman.Erika@epa.gov]  
**Subject:** RE: EPA recommended 2015 WQC

I would characterize it as workload/policy. There was a concentrated effort on human health being a priority and taking on aquatic life criteria as well would have been a major undertaking.

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P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

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**From:** Inouye, Laura (ECY) [mailto:Lino461@ECY.WA.GOV]  
**Sent:** Monday, March 27, 2017 11:23 AM  
**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>; Hoffman, Erika <[Hoffman.Erika@epa.gov](mailto:Hoffman.Erika@epa.gov)>  
**Subject:** RE: EPA recommended 2015 WQC

Thank you Matt!

Follow-up question: when EPA took on updating Ecology's WQ criteria, why did they not also update the aquatic life at the same time? Was it technical, or workload/policy?

Laura

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**From:** Szelag, Matthew [mailto:[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)]  
**Sent:** Monday, March 27, 2017 9:44 AM  
**To:** Hoffman, Erika <[Hoffman.Erika@epa.gov](mailto:Hoffman.Erika@epa.gov)>  
**Cc:** Inouye, Laura (ECY) <[Lino461@ECY.WA.GOV](mailto:Lino461@ECY.WA.GOV)>  
**Subject:** RE: EPA recommended 2015 WQC

Hi Laura and Erika,  
Here is a link to the EPA 304(a) recommendations for aquatic life criteria. <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>

I just scanned the list and didn't see any pollutants that were updated specifically in 2015 (cadmium and selenium were updated in 2016), but we do periodically revise the recommendations as you'll see. Some of the recommendations are older however. Perhaps they are comparing the stringency of EPA's recommendations to the aquatic life criteria Ecology has adopted into their WQS? Ecology hasn't updated the majority of their aquatic life since 1992.

Hope this helps.

---

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**From:** Hoffman, Erika  
**Sent:** Friday, March 24, 2017 12:18 PM  
**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>



**Subject:** FW: EPA recommended 2015 WQC

Matt,

Quick question from Laura Inouye at ECY. Do you know anything about 2015 EPA WQC for aquatic life???? I've cc'd Laura on this email.

Erika

[illegible]

Erika Hoffman | Biologist | U.S. Environmental Protection Agency Washington Operations  
Office | 300 Desmond Drive, Suite 102 | Lacey, WA 98503 | 360.753.9540 | Personal Phone / Ex. 6  
(Cell)

**From:** Inouye, Laura (ECY) [<mailto:Lino461@ECY.WA.GOV>]

**Sent:** Friday, March 24, 2017 1:17 PM

**To:** Hoffman, Erika <[Hoffman.Erika@epa.gov](mailto:Hoffman.Erika@epa.gov)>

**Subject:** RE: EPA recommended 2015 WQC

Thanks, the opposing side is referencing 2015 EPA that have more stringent aquatic life recommended criteria.

**From:** Hoffman, Erika [mailto:Hoffman.Erika@epa.gov]

**Sent:** Friday, March 24, 2017 12:56 PM

**To:** Inouye, Laura (ECY) <Lino461@ECY.WA.GOV>

**Subject:** RE: EPA recommended 2015 WQC

The only thing that I can think of is EPA's 2015 final rule that revised some Federal HH criteria applicable to Washington State. I've attached the power point that Matt Szelag gave on this (you've seen it before). Hopefully it will help.

Matt's phone number (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

[illegible]

Erika Hoffman | Biologist | U.S. Environmental Protection Agency Washington Operations  
Office | 300 Desmond Drive, Suite 102 | Lacey, WA 98503 | 360.753.9540 | 360.556.9016  
(Cell)

**From:** Inouye, Laura (ECY) [mailto:Lino461@ECY.WA.GOV]

**Sent:** Thursday, March 23, 2017 3:36 PM

**To:** Hoffman, Erika <Hoffman.Erika@epa.gov>

**Subject:** EPA recommended 2015 WQC

Call me please ASAP, need input for deposition going on tomorrow.

Message

---

**From:** Szelag, Matthew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F1E48230D96943F8ACB72810E32CE8D6-SZELAG, MATTHEW]  
**Sent:** 12/9/2016 7:52:14 PM  
**To:** Conklin, Becca (ECY) [bcon461@ECY.WA.GOV]  
**Subject:** RE: Updating Ecology's publication no. 06-10-091

Hi Becca,

Thanks for sharing this and providing the opportunity to review. I have a couple comments, but I would characterize them all as suggestions with the exception of the footnotes.

In the intro language (suggested edits in red):

- Table 240 includes a column listing EPA's federally promulgated human health criteria at 40 CFR 131.45.
- For chemicals with federal criteria, the federal criteria apply for Clean Water Act purposes, such as NPDES permits. (maybe add another example in addition to NPDES permits such as 303(d) listing, etc.?)
- Units of measure are µg/L for all substances except ammonia and chloride, which are mg/L. (consider calling out methylmercury mg/kg units here? – although I know it's in the footnote directly below)
- In the applicability section, I agree with not copying (d) *applicable use designations*, but it might be good to specifically mention in an additional note that the applicability section in the federal rule addresses this. Perhaps something like, "For information on the applicable use designations for the federal criteria, see 40 CFR 131.45 (d)."

On the footnotes, I'd suggest pulling straight from our rule instead of the CWA Effective Table we put together. This mostly effects footnote a. Since we didn't promulgate federal criteria for copper or asbestos, it looks strange to have that footnote about the Safe Drinking Water Act applied to the criteria in the table. Footnote a directly from the federal rule is for arsenic (carried over from the NTR): This criterion refers to the inorganic form of arsenic only. I'd also probably recommend using the language from footnote \*\* that's directly from the rule too: \*\* These criteria were promulgated for Washington in the National Toxics Rule at 40 CFR 131.36, and are moved into 40 CFR 131.45 to have one comprehensive human health criteria rule for Washington. I think the rest of the footnotes are identical.

I did a spot check of the table and everything looked good to me. It may be a bit confusing for people to see the numbers side-by-side, but I think the explanation above will hopefully clarify enough. I'm assuming it's necessary to keep the criteria that were disapproved in the table since they are still in your state regulations?

Hope this helps and let me know if you have any questions. Thanks!

*Please note the new phone number and address below.*

---

Matthew Szelag | Water Quality Standards Coordinator  
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222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | szelag.matthew@epa.gov

---

**From:** Conklin, Becca (ECY) [mailto:bcon461@ECY.WA.GOV]  
**Sent:** Thursday, December 08, 2016 2:02 PM  
**To:** Szelag, Matthew <Szelag.Matthew@epa.gov>  
**Subject:** RE: Updating Ecology's publication no. 06-10-091

Hi Matt,

I added text (per Cheryl's suggestion) in the "explanation" section. Please use the attached draft version for any review you have time for.

Thanks again, Matt!

**Becca Conklin**

Department of Ecology | Water Quality Standards Coordinator  
P.O. Box 47600 | Olympia, WA 98504-7600 | ph. 360-407-6413

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**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]

**Sent:** Wednesday, December 07, 2016 6:30 PM

**To:** Conklin, Becca (ECY) <[bcon461@ECY.WA.GOV](mailto:bcon461@ECY.WA.GOV)>

**Subject:** RE: Updating Ecology's publication no. 06-10-091

Yikes! That's cold!

I'm in an all-day meeting but will look at this Friday. Thanks.

*Please note the new phone number and address below.*

---

**Matthew Szelag** | Water Quality Standards Coordinator  
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222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
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**From:** Conklin, Becca (ECY) [<mailto:bcon461@ECY.WA.GOV>]

**Sent:** Wednesday, December 07, 2016 3:38 PM

**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>

**Subject:** RE: Updating Ecology's publication no. 06-10-091

As a former Vermonter, I will say that "warm" and "cold" are relative. My personal favorite temperature is -5 degrees F. Perfect!

A criteria spot check and thoughts on the explanation would be great! Thank you! I attached the PDFd document (working draft form). If this format is unwieldy, please let me know.

Thanks again,  
Becca

**Becca Conklin**

Department of Ecology | Water Quality Standards Coordinator  
P.O. Box 47600 | Olympia, WA 98504-7600 | ph. 360-407-6413

---

**From:** Szelag, Matthew [<mailto:Szelag.Matthew@epa.gov>]

**Sent:** Wednesday, December 07, 2016 3:24 PM

**To:** Conklin, Becca (ECY) <[bcon461@ECY.WA.GOV](mailto:bcon461@ECY.WA.GOV)>

**Subject:** RE: Updating Ecology's publication no. 06-10-091

Hi Becca,

Doing well and trying to get used to the cold...I think it's a little odd when temperatures in the teens start to feel warm, but maybe that's what makes people tough up here? Hope you're doing well and gearing up for what sounds like some exciting weather.

I don't anticipate us having any issues with replicating the federal criteria in the easy to read publication of WA's WQS. I think it's probably a good idea because I'm assuming that's the main resource people use when determining applicable criteria. If you want to send me the new document, I'd be happy to look at the explanation and do a quick spot check of the criteria values themselves.

I'll also double check with folks here to make sure they don't have any concerns. Thanks!

*Please note the new phone number and address below.*

---

**Matthew Szelag** | Water Quality Standards Coordinator  
**U.S. Environmental Protection Agency | Region 10**  
222 W 7<sup>th</sup> Avenue, #19 | Anchorage, AK 99513  
P: (907) 271.1208 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

---

**From:** Conklin, Becca (ECY) [<mailto:bcon461@ECY.WA.GOV>]

**Sent:** Wednesday, December 07, 2016 11:15 AM

**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>

**Subject:** Updating Ecology's publication no. 06-10-091

Hi Matt,

I hope you are doing well up north. It looks wicked chilly! Us lowlanders are faced with snow in the next day or two. Some are more excited than others. (I love snow! ☺)

I'm working on updating [Ecology's publication no. 06-10-091](#) to reflect the WQ Standards rule language we adopted August 1<sup>st</sup>. Because this is our "easy-read" version, we would like to include a reference column in Table 240. The column would list the federal promulgated human health criteria. The intent is for users to have an easy reference to all the applicable HHC for Washington.

Would inclusion of the federal criteria cause any issue? I added a call-out box before the table explaining the additional criteria, and included a link to the EPA page (<https://www.epa.gov/wqs-tech/water-quality-standards-regulations-washington#fed>).

Additionally, would you care to review the EPA criteria values I placed in table 240 (and explanation)? I copied them from the super helpful table you created, but an extra check is never a bad thing!

Thanks,  
Becca

**Becca Conklin**

Department of Ecology | Water Quality Standards Coordinator  
P.O. Box 47600 | Olympia, WA 98504-7600 | ph. 360-407-6413

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Message

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**From:** Szelag, Matthew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F1E48230D96943F8ACB72810E32CE8D6-SZELAG, MATTHEW]  
**Sent:** 7/5/2016 5:17:36 PM  
**To:** mgil461@ECY.WA.GOV  
**Subject:** natural conditions memo  
**Attachments:** naturalbackground-memo.pdf

Hi Melissa,

Sorry, I was out of the office and just got your voicemail today. Hope this isn't too late. The memo we refer to for guidance on natural conditions and human health is attached – typically called the Tudor Davies memo. See the bottom of page 2.

Please call if you have questions or want to discuss, thanks!

---

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
1200 6th Avenue, Suite 900, OWW-191 | Seattle, WA 98101  
P: (206) 553.5171 | szelag.matthew@epa.gov



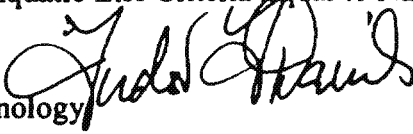
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

NOV 5 1997

OFFICE OF  
WATER

**MEMORANDUM**

**SUBJECT:** Establishing Site Specific Aquatic Life Criteria Equal to Natural Background

**FROM:** Tudor T. Davies, Director   
Office of Science and Technology

**TO:** Water Management Division Directors, Regions 1-10  
State and Tribal Water Quality Management Program Directors

In the course of reviewing State and Tribal water quality standards (WQS), EPA has identified several issues pertaining to the establishment of site specific numeric criteria on the basis of natural background conditions. EPA is issuing this policy to provide greater clarity and direction for States and Tribes who are considering establishing site specific criteria equal to natural background conditions, and for EPA Regional Offices reviewing State and Tribal water quality management programs.

**Background**

Site specific criteria are allowed by regulation and are subject to EPA review and approval. The Federal water quality standards regulation at 40 CFR 131.11(b)(1) requires States and authorized Tribes to adopt numeric water quality criteria that are based on section 304(a) criteria, section 304(a) criteria modified to reflect site-specific conditions, or other scientifically defensible methods. Under 40 CFR 131.5(a)(2), EPA reviews State WQS to determine whether a State has adopted criteria to protect the designated uses. Existing guidance and practice are that EPA will approve site specific criteria developed on the basis of sound scientific rationales.

Currently, EPA guidance has specified three procedures for States and Tribes to follow in deriving site specific criteria. These are the Recalculation Procedure, the Water-Effect Ratio Procedure and the Resident Species Procedure. These procedures can be found in the *Water Quality Standards Handbook* (EPA-823-B940005a, 1994). EPA also recognizes there may be naturally occurring concentrations of pollutants which may exceed the national criteria published under section 304(a) of the Clean Water Act.

## Policy

This policy applies only to site specific numeric aquatic life criteria based on natural background. States and Tribes may establish site specific numeric aquatic life water quality criteria by setting the criteria value equal to *natural* background. Natural background is defined as background concentration due *only* to non-anthropogenic sources, i.e., non-manmade sources. In setting criteria equal to natural background the State or Tribe should, at a minimum, include in their water quality standards:

- (1) a definition of natural background consistent with the above;
- (2) a provision that site specific criteria may be set equal to natural background;
- (3) a procedure for determining natural background, or alternatively, a reference in their water quality standards to another document describing the binding procedure that will be used.

## Discussion

A State or Tribal procedure for determining natural background will need to be specific enough to establish natural background concentration accurately and reproducibly. States and Tribes should also provide for public notice and comment on the definition, the provision, the procedure and the site specific numeric criteria derived from the procedure. The State or Tribe will need to document the resulting site specific numeric criteria in the State or Tribal water quality standards, including specifying the water body segment to which the site specific criteria apply. This can be accomplished through adopting the site specific criteria into the State or Tribal WQS, or, alternatively, by appending the site specific criteria to the WQS. In either case, the State or Tribe must comply with the public participation requirements of 40 CFR 131.20 and 40 CFR Part 25, and State and Tribal citizens should be able to readily determine the water quality criteria applicable to specific water bodies.

For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans. The State or Tribe should consider refining the designated use for the water body to more precisely define the existing aquatic life use.

This policy does not apply to human health uses. For human health uses, where the natural background concentration is documented, this new information should result in, at a minimum, a re-evaluation of the human health use designation. Where the new background information documents that the natural background concentration does not support a human health use previously believed attained, it may be prudent for the State or Tribe to change the human health use to one the natural background concentration will support (e.g., from drinking water supply to drinking water supply only after treatment).

## Conclusion

This policy explains and clarifies the use of natural background conditions in establishing site specific criteria for protection of aquatic life uses. In addition to the three procedures listed above for deriving site specific criteria as discussed above, States and Tribes can address natural background conditions through refining the designated use to more accurately reflect the aquatic community present within the stream segment. EPA recognizes that there are other options available to States/Tribes to account for other ambient conditions (e.g., concentrations due to non-natural, man-made conditions) which exceed the national criteria. One such option is for a State or Tribe to conduct a Use Attainability Analysis, consistent with the requirements of 40 CFR 131.10, and adopt a use which is less than the 101(a) goal uses of the Clean Water Act, e.g., less than "fishable/swimmable", or modify a 101(a) goal use such that less stringent criteria are required. In any case, the existing uses of the water body segment must be maintained and protected.

If you have any questions or concerns regarding this policy, please contact me or have your staff contact Elizabeth Southerland, Acting Director, Standards and Applied Science Division, at 202-260-3966.

cc: Lepow, OGC  
Wayland, OWOW  
Cook, OWM  
Dougherty, OGWDW



Message

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**From:** Szlag, Matthew [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=F1E48230D96943F8ACB72810E32CE8D6-SZELAG, MATTHEW]  
**Sent:** 6/24/2016 12:15:28 AM  
**To:** Niemi, Cheryl (ECY) [cnie461@ECY.WA.GOV]  
**CC:** mgil461@ECY.WA.GOV; Chung, Angela [Chung.Angela@epa.gov]  
**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Thanks Cheryl.

As we discussed, I think HQ sees the situation differently, but I understand you don't agree.

---

Matthew Szlag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
1200 6th Avenue, Suite 900, OWW-191 | Seattle, WA 98101  
P: (206) 553.5171 | szlag.matthew@epa.gov

---

**From:** Niemi, Cheryl (ECY) [mailto:cnie461@ECY.WA.GOV]  
**Sent:** Thursday, June 23, 2016 7:50 AM  
**To:** Szlag, Matthew <Szlag.Matthew@epa.gov>  
**Cc:** mgil461@ECY.WA.GOV; Chung, Angela <Chung.Angela@epa.gov>  
**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Thanks for sending this on Matt.

This is quite an interesting situation, and I appreciate our good conversation yesterday.

As I read this it means EPA is saying its 304(a) guidance, past mistakes in scientific judgement, and its analytical issues override the longstanding published list in the regulation at 40 CFR Part 423, as well as CWA 303(c)(2)(B). The description in the e-mail below looks like not just rule-by-guidance, but guidance over-riding rule *and* law. An odd situation.

Thanks,

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
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P.O. Box 47600  
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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

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**From:** Szlag, Matthew [mailto:Szlag.Matthew@epa.gov]  
**Sent:** Wednesday, June 22, 2016 4:25 PM  
**To:** Niemi, Cheryl (ECY) <cnie461@ECY.WA.GOV>; Chung, Angela <Chung.Angela@epa.gov>

**Cc:** Gildersleeve, Melissa (ECY) <[MGIL461@ECY.WA.GOV](mailto:MGIL461@ECY.WA.GOV)>

**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Hi Cheryl,

As I mentioned during our conversation, I have an update from HQ on the information I provided earlier.

After additional consideration and conversations with people who worked on the methods update rule and people in IRIS, our understanding is that the name "bis(2-chloroisopropyl) ether" has been used for at least two different isomers: CASRN 108-60-1 and CASRN 39638-32-9. In EPA's methods update rule, the Agency proposed in 2015 to correct the name to match CASRN 108-60-1, noting that bis(2-chloroisopropyl)ether has likely never been in industrial production, and is therefore unlikely to be a compound of monitoring concern. Furthermore, EPA noted that it is not possible to procure an analytical standard reference material for the compound with CAS number 39638-32-9. Therefore, when EPA published the priority pollutant list on July 31, 1979 (44 FR 44501), in EPA's best scientific judgment, the chemical name "bis(2-chloroisopropyl) ether" (priority pollutant) was intended to describe the isomer associated with CASRN 108-60-1. EPA has had 304(a) recommended criteria for the pollutant with CASRN 108-60-1 since before the NTR, and updated the underlying science in 2015. We now refer to that priority pollutant as "Bis(2-Chloro-1-Methylethyl) Ether." As we continue to draft our final rule, we plan to include this chemical.

Please give me a call if you'd like to discuss. Thanks,

---

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
1200 6th Avenue, Suite 900, OWW-191 | Seattle, WA 98101  
P: (206) 553.5171 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

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**From:** Szelag, Matthew

**Sent:** Monday, June 13, 2016 3:06 PM

**To:** 'Niemi, Cheryl (ECY)' <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>; Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>

**Cc:** [mgil461@ECY.WA.GOV](mailto:mgil461@ECY.WA.GOV)

**Subject:** RE: !!FW: Help please! HHC question on which chem is the priority pollutant

Hi Cheryl,

Thanks for your patience as we sorted this out. After coordinating with HQ, you are correct, these two chemicals are not the same. It turns out the IRIS list of synonyms is incorrect. The 2015 criteria document uses the tox value, BAFs, and RSC information for bis-2-chloro-1-methyl ethyl ether (CAS no. 108-60-1) not bis 2-chloroisopropyl ether (CAS no. 39638-32-9).

The only thing that is factually wrong in the EPA's criteria document is the list of synonyms at the end, which we got from the IRIS website. EPA will need to indicate on our website that this is a non-priority pollutant. As a result, EPA currently does not have a 304(a) recommendation for the priority pollutant, bis 2-chloroisopropyl ether (CAS no. 39638-32-9).

Please give me a call if you'd like to discuss further. Thanks!

---

Matthew Szelag | Water Quality Standards Coordinator  
U.S. Environmental Protection Agency | Region 10  
1200 6th Avenue, Suite 900, OWW-191 | Seattle, WA 98101  
P: (206) 553.5171 | [szelag.matthew@epa.gov](mailto:szelag.matthew@epa.gov)

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**From:** Niemi, Cheryl (ECY) [<mailto:cnie461@ECY.WA.GOV>]

**Sent:** Wednesday, June 08, 2016 9:48 AM

**To:** Szelag, Matthew <[Szelag.Matthew@epa.gov](mailto:Szelag.Matthew@epa.gov)>; Chung, Angela <[Chung.Angela@epa.gov](mailto:Chung.Angela@epa.gov)>

**Cc:** [mgil461@ECY.WA.GOV](mailto:mgil461@ECY.WA.GOV)

**Subject:** !!FW: Help please! HHC question on which chem is the priority pollutant

**Importance:** High

Hi Matt and Angela.

I am really confused about the issue described in the e-mails below. I think that EPA's new 304(a) guidance chemical bis(2-chloro-1-methylethyl) ether is not a priority pollutant. I think EPA followed a CAS# path instead of the PP List in the CFR (which does not have CAS #'s). I am hoping you can help clarify me with this, and soon! We have to get any final rule language changes to the code reviser by the 14<sup>th</sup> of this month!! I added some highlight below to help summarize the quandary. Please call me if you have questions about this e-mail. Following the names and CAS #'s can be complicated.

We are getting close to done!

Thanks for your assistance.

Cheryl

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
Department of Ecology  
P.O. Box 47600  
Olympia WA 98504  
360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

---

**From:** Niemi, Cheryl (ECY)

**Sent:** Wednesday, June 08, 2016 8:50 AM

**To:** 'douglas.kolwaite@alaska.gov' <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>; 'Sonafrank, Nancy B (DEC)' <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; 'Tabor, Brock N (DEC)' <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>

**Cc:** 'Don.Essig@deq.idaho.gov' <[Don.Essig@deq.idaho.gov](mailto:Don.Essig@deq.idaho.gov)>; [Kenneth.Weaver@dep.state.fl.us](mailto:Kenneth.Weaver@dep.state.fl.us); 'Kuhns, Mick' <[Mick.Kuhns@maine.gov](mailto:Mick.Kuhns@maine.gov)>

**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Thanks Doug for sending this on.

I looked at the IRIS page again but could not find anything from 2007. Below is a snip of the 1989 IRIS page I referred to in the table in my e-mail below:

## VIII. Synonyms

Substance Name — Bis(2-chloro-1-methylethyl) ether

CASRN — 108-60-1

Last Revised — 10/01/1989

- 108-60-1
- 2,2'-Oxybis(1-chloropropane)
- BCMEE
- beta, beta'-dichlorodiisopropyl ether
- Bis(1-chloroisopropyl) ether
- Bis(1-chloro-2-propyl) ether
- Bis(beta-chloroisopropyl) ether
- Bis(2-chloroisopropyl) ether [this synonym is also used with CASRN 39638-32-9]
- DCIP (nematocide)
- Dichlorodiisopropyl ether
- 2,2'-Dichlorodiisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- 2,2'-Dichloroisopropyl ether [this synonym is also used with CASRN 39638-32-9]
- Ether, bis(2-chloro-1-methylethyl)
- HSDB 503
- NCI-C50044
- Nemamort
- Nemamorte
- Propane, 2,2'-oxybis(1-chloro-
- RCRA waste number U027

I went back and checked EPA's priority pollutant list and the CFR once again – just to be sure I was reading them correctly – and am still seeing that the named priority pollutant is bis(2-chloroisopropyl) ether, with no CAS number indicated.

The file you sent does reinforce that they are different compounds, and that EPA, at least in the IRIS database, made a decision to equate them.

So –

I am trying to get to the bottom of this because the CWA requires states to adopt criteria for priority pollutants that could be impacting uses, and in WA we have made the decision to adopt criteria for PPs that EPA has developed criteria now for (except meHg), regardless of whether they are impacting waters. But if this chemical is not on the PP list, regardless of what IRIS (or the EPA analytical methods group) has decided for their purposes, then I am not sure what to do about recommending or not recommending adoption of the criteria for bis(2-chloroisopropyl) ether. Especially since it is clear that the two chemicals are different, and because of that I cannot imagine why the text above is in IRIS. Maybe an error or again maybe something going on that I just haven't found the explanation for. However, the language in the CWA is pretty clear about the list of toxic pollutants, and EPA has moved that language on through to regulation that contains the list of PPs for CWA purposes, and I just can't find bis(2-chloro-1-methylethyl) ether on the PP list.

This web site has an excellent description of the CWA to CFR transition and links to recent lists: <https://www.epa.gov/eg/toxic-and-priority-pollutants-under-clean-water-act> .

I will think about this some more and then probably send it on to EPA soon.

If anyone has additional info to add I'd be grateful.

Don-- thanks for your response in a separate e-mail. If EPA means to refer to bis(2-chloro-1-methylethyl) ether then why don't they modify the CFR to add it to the PP list, or at least provide an explanation of it in the new criteria document for that chemical? The language on the CWA and CFRs set out the legal requirements, and the new criteria by EPA are just guidance values. Is EPA aware of the discrepancy?

Cheryl

---

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Surface Water Quality Standards Specialist  
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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

---

**From:** Kolwaite, Douglas S (DEC) [<mailto:douglas.kolwaite@alaska.gov>]  
**Sent:** Tuesday, June 07, 2016 2:34 PM  
**To:** Niemi, Cheryl (ECY) <[cnie461@ECY.WA.GOV](mailto:cnie461@ECY.WA.GOV)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

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**From:** Kolwaite, Douglas S (DEC)  
**Sent:** Tuesday, June 07, 2016 1:32 PM  
**To:** 'mailto:cnie461@ECY.WA.GOV' <<mailto:cnie461@ECY.WA.GOV>>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>; Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

Cheryl,

The ethyl is the priority pollutant. The isopropyl likely doesn't make it into environment without reacting.

The attached discussion from NELAC might be helpful.

Doug

---

**From:** Sonafrank, Nancy B (DEC)  
**Sent:** Tuesday, June 07, 2016 1:23 PM  
**To:** Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>; Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Subject:** RE: Help please! HHC question on which chem is the priority pollutant

I haven't run across that discrepancy before. I agree they are two different compounds. I am not sure we can help her on which is the priority pollutant.

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**From:** Tabor, Brock N (DEC)  
**Sent:** Tuesday, June 07, 2016 8:47 AM  
**To:** Kolwaite, Douglas S (DEC) <[douglas.kolwaite@alaska.gov](mailto:douglas.kolwaite@alaska.gov)>  
**Cc:** Sonafrank, Nancy B (DEC) <[nancy.sonafrank@alaska.gov](mailto:nancy.sonafrank@alaska.gov)>  
**Subject:** FW: Help please! HHC question on which chem is the priority pollutant

Doug- can you take a look at this question from Cheryl? Way outside of my field.

Nancy's background might help if you're not familiar either.

Thank you!

---

**From:** Niemi, Cheryl (ECY) [<mailto:cnie461@ECY.WA.GOV>]  
**Sent:** Tuesday, June 07, 2016 8:43 AM  
**To:** [Kenneth.Weaver@dep.state.fl.us](mailto:Kenneth.Weaver@dep.state.fl.us); [Don.Essig@deq.idaho.gov](mailto:Don.Essig@deq.idaho.gov); Tabor, Brock N (DEC) <[brock.tabor@alaska.gov](mailto:brock.tabor@alaska.gov)>; Kuhns, Mick <[Mick.Kuhns@maine.gov](mailto:Mick.Kuhns@maine.gov)>  
**Subject:** Help please! HHC question on which chem is the priority pollutant

Hi all.

I have found a puzzle and hoping one of you might have seen this HHC oddity and might have resolved in already. Please see the information below and, hopefully, tell me you have already figured out the answer – or – maybe I am just not reading the circumstances correctly?!

If this is real then I need to figure out whether this will affect final rule language in our state HHC rule, and also figure out what it might mean for EPA's proposed rule for WA.

Sometimes, when I e-mail, snips they end up in different places on the recipient's e-mail. If it looks like things are out of place let me know and I will copy into a Word file and resend.

Thank you!

Cheryl

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**Below is info that describes the oddity I have come upon:**

Two different compounds are at issue here. Same molecular weight and same elemental make-up but chemical structure is different. Please note which carbon the Cl is attached to in the two pictures below:

Here is NIST page for Bis(2-chloroisopropyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=39638-32-9> NIST Bis(2-chloroisopropyl) ether

File Edit View Favorites Tools Help

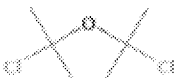
[http--resources.regulatio...](#) [http--resources.regulatio...](#) [Vault - Search](#) [Retention Schedule](#) [Access WA](#) [Google](#)

**NIST**  
National Institute of  
Standards and Technology

**MATERIAL  
MEASUREMENT  
LABORATORY**

Star

## Bis(2-chloroisopropyl) ether

- **Formula:** C<sub>6</sub>H<sub>12</sub>Cl<sub>2</sub>O
- **Molecular weight:** 171.065
- **IUPAC Standard InChI:**
  - InChI=1S/C6H12Cl2O/c1-5(2,7)9-6(3,4)8/h1-4H3
  - Download the identifier in a file.
- **IUPAC Standard InChIKey:** BULHJTXR2FEUDQ-UHFFFAOYSA-N
- **CAS Registry Number:** 39638-32-9
- **Chemical structure:**


This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- **Other names:** Propane, 2,2'-oxybis[2-chloro-; Propane, 2,2'-oxybis\*2-chloro-; 2,2'-oxybis[2-chloropropane]
- **Permanent link for this species.** Use this link for bookmarking this species for future reference.
- **Information on this page:**
  - Notes / Error Report
- **Other data available:**
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- **Options:**
  - Switch to calorie-based units

**InChI TRUST**  
CERTIFIED  
2011

Here is NIST page for Bis(2-chloro-1-methylethyl)ether: <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> and see snip below.

← <http://webbook.nist.gov/cgi/cbook.cgi?ID=108-60-1> NIST Bis(2-chloro-1-methylethyl) ether

File Edit View Favorites Tools Help

[http--resources.regulatio...](#) [http--resources.regulatio...](#) [Vault - Search](#) [Retention Schedule](#) [Access WA](#) [Google](#)

**NIST**  
National Institute of  
Standards and Technology


**MATERIAL  
MEASUREMENT  
LABORATORY**

Standard Reference  
Data Program

Data  
Gateway

Chemistry  
Webbook

## Bis(2-chloro-1-methylethyl) ether

- **Formula:** C<sub>8</sub>H<sub>16</sub>Cl<sub>2</sub>O
- **Molecular weight:** 171.065
- **IUPAC Standard InChI:**
  - InChI=1S/C8H16Cl2O/c1-5(3-7)9-6(2)4-8/h3-6H, 3-4H2, 1-2H3
  - Download the identifier in a file.
- **IUPAC Standard InChIKey:** QPFCCTYNLQORT-UHFFFAOYSA-N
- **CAS Registry Number:** 108-60-1
- **Chemical structure:**


This structure is also available as a 2d Mol file or as a computed 3d SD file  
The 3d structure may be viewed using Java or Javascript.

- **Other names:** Propane, 2,2'-oxybis[1-chloro-; Ether, bis(2-chloro-1-methylethyl); 3,3'-Dichlorodisopropyl ether; DCIP; DCBP (Nematocide); 2,2'-Dichlorodisopropyl ether; (2-Chloro-1-methylethyl) ether; Bis(β-chloroisopropyl) ether; Dichlorodisopropyl ether; Dichloroisopropyl ether; NC1-C50044; 2,2'-Dichloroisopropyl ether; Bis(1-chloro-2-propyl) ether; NSC 2849
- **Permanent link for this species.** Use this link for bookmarking this species for future reference.
- **Information on this page:**
  - Notes / Error Report
- **Other data available:**
  - Phase change data
  - Henry's Law data
  - IR Spectrum
  - Mass spectrum (electron ionization)
  - Gas Chromatography
- **Options:**
  - Switch to calorie-based units

**InChI TRUST**  
CERTIFIED  
2011

Here is EPA's Priority Pollutant (PP) List as of 2014: <https://www.epa.gov/sites/production/files/2015-09/documents/priority-pollutant-list-epa.pdf>.

The PP on this list is:

42. Bis(2-chloroisopropyl) ether

Here is the 2014 CFR with the PP list: <https://www.gpo.gov/fdsys/pkg/CFR-2014-title40-vol29/pdf/CFR-2014-title40-vol29-part423-appA.pdf>

The PP on this list is:

042 Bis(2-chloroisopropyl) ether

<Note: The CAS #'s are not indicated on the PP lists.>

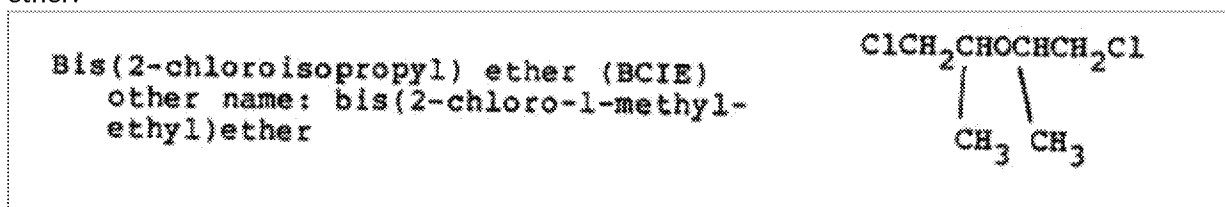
Some EPA history:

Date/publication	CAS	Chemical	Notes
1980 NRWQC <i>Ambient Water Quality Criteria for Chloroalkyl Ethers</i> EPA 440/5-80-030 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/2000M20U.PDF?Dockey=2000M20U.PDF</a>	Not indicated	Bis(2-chloroisopropyl)ether	Page 10 of 11 the bis(2-chloroisopropyl) ether is a chemical.
1989 EPA IRIS, see page 6 <a href="https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf">https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0407_summary.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	On page 6 of 11 represents bis(2-chloro-1-methylethyl) ether is a chemical. ----- ----- ----- I can't find the IRIS summary for 108-60-1.
1992 NTR (chem #67)	108-60-1	Bis(2-chloroisopropyl)ether	
2002 matrix EPA-822-R-02-012, page 9 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/20003IEI.PDF?Dockey=20003IEI.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	On page 9 of 11 table 1 "Bis(2-chloroisopropyl) ether"



			60-396
2002 NRWQC EPA-822-R-02-047, page 16 <a href="http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF">http://nepis.epa.gov/Exe/ZyPDF.cgi/P1005EYQ.PDF?Dockey=P1005EYQ.PDF</a>	108-60-1	Bis(2-chloroisopropyl)ether	
2015 NRWQC <a href="https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212">https://www.regulations.gov/#!documentDetail;D=EPA-HQ-OW-2014-0135-0212</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	EPA ind
EPA's 2015 proposed regulation for WA <a href="https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf">https://www.gpo.gov/fdsys/pkg/FR-2015-09-14/pdf/2015-22592.pdf</a>	108-60-1	Bis(2-chloro-1-methylethyl) ether	The is: * B Me wa as l Chl Eth

The structure below, from the 1980 criteria document, corresponds to the structure of bis(2-chloro-1-methylethyl) ether:



I think that the actual PP is bis(2-chloroisopropyl)ether (based on the CFR language – which does not contain CAS #'s) and that the correct CAS# is 39638-32-9. If this is so, what is the correct toxicity value for this compound? The two chemicals are indicated to be synonyms in IRIS, but I think this is incorrect. The placement of the chlorines is different, and the toxicity might also be different. I also checked this with a chemist here just to make sure I was thinking straight. He compared the structure of the two compounds and he agrees they are different.

So here is what I think the criteria status might be:

	EPA's new 2015 criteria: Bis(2-chloro-1-methylethyl)ether CAS 108-60-1	Older EPA criteria (with corrected CAS #): Bis(2-chloroisopropyl)ether CAS 39638-32-9
Priority pollutant?	No	Yes
New 2015 recommended EPA criteria?	Yes	No

Is there something here that I am not seeing that makes this a straightforward solution or is it as odd as I am perceiving it to be?

**Thanks for looking at this!**

---

Cheryl A. Niemi  
Surface Water Quality Standards Specialist  
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360.407.6440  
[cheryl.niemi@ecy.wa.gov](mailto:cheryl.niemi@ecy.wa.gov)

Note: This e-mail may be subject to public disclosure.

Message

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**From:** Schwartz, Jerry [Jerry\_Schwartz@afandpa.org]  
**Sent:** 5/2/2017 8:23:44 PM  
**To:** Washington, Evelyn [Washington.Evelyn@epa.gov]  
**Subject:** FW: Follow-up on request for list for petitions

Hi Evelyn,

I was just checking to see if you were able to figure out if the IDEQ letter is on your "informal" request list. Thanks, Jerry

---

**From:** Schwartz, Jerry  
**Sent:** Thursday, April 27, 2017 2:23 PM  
**To:** 'Washington, Evelyn' <Washington.Evelyn@epa.gov>  
**Cc:** 'Hisel-Mccoy, Sara' <Hisel-McCoy.Sara@epa.gov>; 'Southerland, Elizabeth' <Southerland.Elizabeth@epa.gov>  
**Subject:** RE: Follow-up on request for list for petitions

All,

Sorry for the multiple emails. It occurs to me that you already have the IDEQ letter, but it is not in your official "formal petition" list. Can you confirm you do have the IDEA letter as an informal request? Thank you, Jerry

---

**From:** Schwartz, Jerry  
**Sent:** Thursday, April 27, 2017 2:18 PM  
**To:** 'Washington, Evelyn' <Washington.Evelyn@epa.gov>  
**Cc:** Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>  
**Subject:** RE: Follow-up on request for list for petitions

Thank you Evelyn,

I know that the head of the Idaho DEQ also has sent the Administrator a letter asking that he approve the water quality criteria that the state submitted after it completed its stakeholder process.

I will see if I can get a copy sent to all of you as well. Thanks again. Jerry

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**From:** Washington, Evelyn [mailto:Washington.Evelyn@epa.gov]  
**Sent:** Wednesday, April 26, 2017 4:30 PM  
**To:** Schwartz, Jerry <Jerry\_Schwartz@afandpa.org>  
**Cc:** Hisel-Mccoy, Sara <Hisel-McCoy.Sara@epa.gov>; Southerland, Elizabeth <Southerland.Elizabeth@epa.gov>  
**Subject:** Follow-up on request for list for petitions

At the OW Coffee with Industry earlier this month, Betsy Southerland mentioned 13 petitions in OST and you phoned Sara Hisel-McCoy seeking this list.

There is an official list on the epa.gov webpage (<https://www.epa.gov/aboutepa/petitions-office-water>) that is updated periodically but only includes what are clearly formal petitions to the agency and does not include other requests that have come in as letters that we, in OW, have also called "petitions," possibly wrongly.

In the table below is the list of 9 that have come in as letter requests. There are 3 additional OST ones on the attached screenshot of today's webpage -- two on the Steam Electric ELG Rule, one on conductivity. There are also 2 others in the Drinking Water Program listed. These account for the 13 that Betsy mentioned at that meeting and the additional one, the 2<sup>nd</sup> one on the Steam Electric Rule, was filed the week following the meeting where this was discussed.

Let me, Sara or Betsy know if you have any questions.

Evelyn Washington  
Associate Director  
Standards and Health Protection Division  
Phone 202-566-0591 -- Fax 202-566-0409

Issue	Petitioner(s)	Unreasonable Delay Suit Filed?
<u>ME HHC (rule and state action)</u>	1. Maine (2/27/17) 2. Pierce Atwood, representing the town of Baileyville ME, Verso Corp, and Woodland Pulp LLC (3/6/17)	N
<u>FL HHC</u>	Florida Clean Water Network (David Ludder)	Y (12/28/16)
<u>AL HHC (plus some ALC)</u>	Florida Clean Water Network (David Ludder)	N
<u>MN NNC</u>	Center for Regulatory Reasonableness (John Hall)	N
<u>AR Coffee Creek and Mossy Lake</u>	Tulane Environmental Law Clinic (on behalf of Ouachita Riverkeeper)	N (draft lawsuit sent to EPA on 12/15/16)
<u>IA Antideg</u>	Iowa	N
<u>WA HHC (rule and state action)</u>	Pulp and Paper groups	N
<u>WA ALC (plus arsenic, dioxin and thallium)</u>	Northwest Environmental Advocates (Nina Bell)	Y (2/21/17)
<u>AK HHC</u>	1. Southeast Alaska Conservation Council and Inside Passage Waterkeeper (11/12/15) 2. Chickaloon Village Traditional Council (12/16/15)	N